JOURNAL

of the

NATIONAL ASSOCIATION *of* CHIROPODISTS

The Official Publication of the Profession

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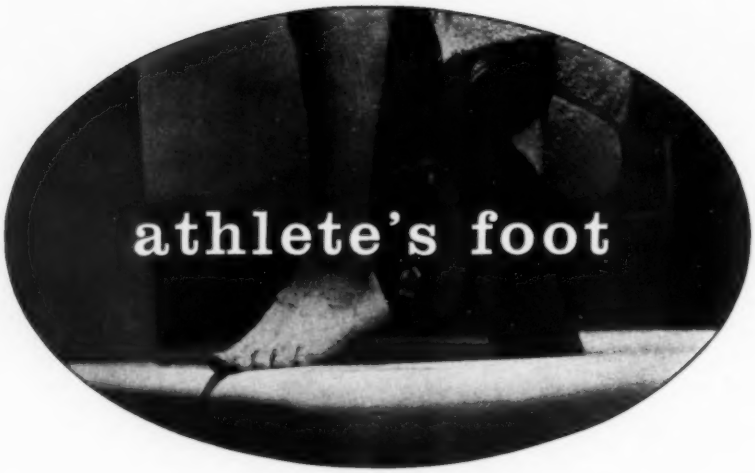
MAY, 1957



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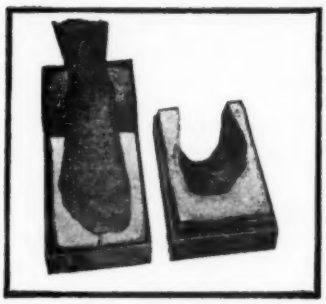

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THE JOURNAL

OF THE

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Manuscripts must be typewritten, double spaced, and an original copy must be submitted. References should give name and initials of author, volume, page, month and year of publication in the case of periodicals, and publisher and place and year of publication in the case of books. Illustrations must be clear photographs. Glossy prints are preferred. Drawings must be made in black ink on heavy paper or cardboard. Any illustrations should bear the author's name and be numbered in the order in which they are referred to in the text. Illustrations must not be pasted on the manuscript. Legends should be placed on a separate sheet. Tables are not illustrations and should be numbered separately.

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Subscription is included in the annual membership dues of the National Association of Chiropodists. The subscription rate for non-members is $10.00 a year in advance. Single copies $1.00 each. Remittance should be made payable to the National Association of Chiropodists.

Notice of change of address should be received six weeks before the change is to become effective. Old and new address must be given.

The *Journal of the National Association of Chiropodists* is published monthly and copyrighted in 1957, by the National Association of Chiropodists.

Entered as second class matter at the P. O. at Boston, Mass., March 27, 1934, under the act of March 3, 1879. Publication office, 375 Broadway, Boston, and Editorial Executive offices 3301 16th St., N.W., Washington 10, D. C.

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   Pharmaceuticals Indications
   Typical Prescriptions Contra-indications
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Connecticut
The Connecticut Board of Examiners in Chiropody will conduct examinations at the State Capitol, Hartford, Conn., on the second Tuesday and Wednesday of July. **Board Secretary:** Dr. F. J. Ruggiero, 3 South Main Street, W. Hartford 7, Conn.

Delaware
The State Board of Chiropody Examiners of Delaware will hold its next examination the second week of July. **Board Secretary:** Dr. Bertram H. Blum, 112 So. State St., Dover, Dela.

District of Columbia
The Board of Podiatry Examiners of the District of Columbia. **Board Secretary:** Dr. Harry L. Hoffman, 1098 National Press Bldg., Washington, D. C.

Florida
The next board meeting of the Florida State Board of Chiropody Examiners will be held for examination on June 8-10, 1957, in Miami, Fla. **Board Secretary:** Dr. Heywood A. Dowling, 203 Greenleaf Bldg., Jacksonville, Fla.

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The Georgia State Board of Chiropody Examiners. **Board President:** Dr Charles W. Beasley, Jr., 1205 First National Bank Bldg., Atlanta, Ga.

Idaho
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Iowa
The Iowa State Chiropody Board of Examiners will conduct examinations at the State Office Building in Des Moines, Iowa, on June 10-12, 1957. **Board Secretary:** Dr. C. T. Howard, Lippert Bldg., Boone, Iowa.

Illinois
The next board meeting of the Illinois Chiropody Examining Committee will be held for reciprocity and examination on June 17-19, 1957, at 160 No. LaSalle St., Chicago, Ill. **Superintendent of Registration:** Fredric B. Selcke, Dept. of Registration and Education, Capitol Bldg., Springfield, Ill.

Kansas
The Kansas Board of Podiatry Examiners will hold its next meeting for examination on June 5-6, 1957, at the University of Kansas Medical Center, Kansas City, Kansas. **Board President:** Dr. L. E. Krause, 1107 Williams St., Great Bend, Kansas, or Kansas Board of Podiatry Examiners, 872 New Brotherhood Bldg., Kansas City, Kansas. **Board Secretary:** L. F. Schmaus, M. D., 864 New Brotherhood Bldg., Kansas City, Kansas.

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Minnesota
The Minnesota Board of Chiropody Examiners will hold its next meeting on June 20, 1957, at the Minnesota State Capitol in St. Paul, Minn. **Board Secretary:** H. W. Leibold, D.S.C., 221 Hamm Bldg., St. Paul 2, Minn.

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The Mississippi State Board of Health. **Board Secretary:** Dr. Felix J. Underwood, Old Capitol, Jackson, Miss.

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The next board meeting of the Missouri State Board of Chiropody will be held for reciprocity and examination on June 16-17, 1957, at the Jefferson Building in Jefferson City, Mo. **Board Secretary:** Dr. L. A. Hansen, 800 Professional Bldg., Kansas City, Mo.

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The next board meeting of the Nevada State Chiropody Board will be held for examination on May 6, 1957 at 150 Chestnut Street, Reno, Nevada. **Board Secretary:** Dr. William A. Edwards, 150 Chestnut St., Reno, Nevada.

New Hampshire
The next meeting of the New Hampshire State Board of Examiners in Chiropody will be held for examination on June 26-27, 1957, at the State House, Concord, N. H. **Board Secretary:** M. Atkinson, M.D., 107 State House, Concord, N. H.

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The next board meeting of the New Mexico State Board of Chiropody will be held for reciprocity (upon application) and examination on July 13-14, 1957, in Albuquerque, N. M. **Board Secretary:** Morris Haas, D.S.C., 1301 Central Ave., East, Albuquerque, N. M.

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The Oklahoma State Board of Chiropody will hold its next meeting for examination on September 28-29, 1957 at 1217 No. Walker in Oklahoma City, Okla. **Board Secretary:** Dr. Warren D. Long, 1217 No. Walker St., Oklahoma City, Okla.

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The Wyoming State Board of Registration in Chiropody will hold its next meeting for reciprocity and examination on June 21-22, 1957, at Capitol Bldg., Cheyenne, Wyoming. **Board Secretary:** Dr. Duane NeuSchultz, P. O. Box 1029, Torrington, Wyo.

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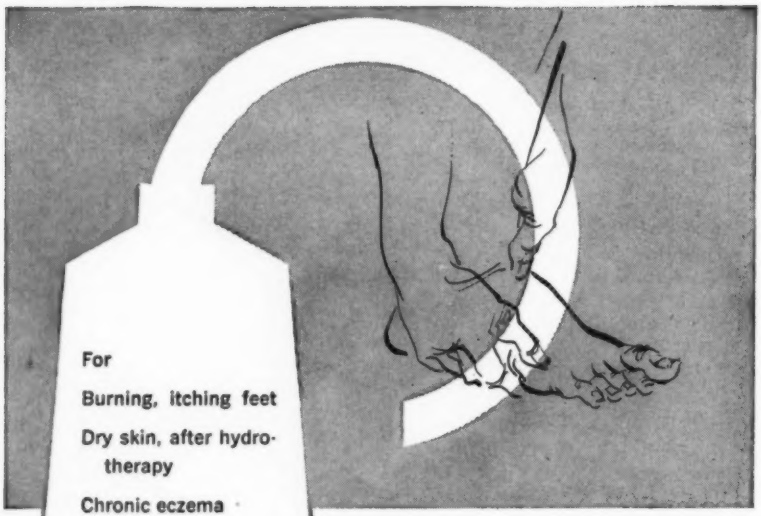

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FOREFOOT IMBALANCE DUE TO ALTERATION OF METATARSUS PARABOLA*

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Hartford, Conn.

EVALUATION of forefoot imbalance can be accomplished by x-ray measurements of the metatarsal length discrepancies (due to atavistic and congenital tendencies) and recognizing the changes in weight distribution of the forefoot from the acceptable normal.

A *metatarsus parabola* or arc is a graphic representation of the relative position of the metatarsal heads. The metatarsus parabolic arc varies according to the width and length of the foot. The metatarsus parabola is characteristically different in each pair of feet. However they are all similar in that they present a mild curve, which can be best described as a straight line bent slightly at its ends. The metatarsus parabola represents the area of weight transmission in the forefoot.

Any change or variation in this arc causes a change and shift of weight along the metatarsus parabola. Weight distribution will shift in an attempt to balance with new weight stress patterns. This shift of weight is found in variant parabolas. When we find upon x-ray examination a variant parabola due to metatarsal length discrepancy we usually have accompanying forefoot imbalance. This is due to the loss of regularity of the metatarsus parabola. The weight follows the variant parabola formed by the position of the metatarsal heads. If a metatarsal is longer or shorter the weight will shift accordingly. Weight bearing at the metaphalangeal area is influenced and imbalance can result, if decompensation of weight distribution takes place so that there is a transference of weight.

On this basis the writer has devised this rule or law: *Law of Forefoot Weight Distribution:* The arc of the metatarsus parabola deviates directly with any inconsistence in the metatarsal lengths and the regular weight distribution pattern varies accordingly.

This can result in one of the following types of forefoot imbalance: 1. Anterior forefoot medial imbalance. 2. Anterior forefoot lateral imbalance. 3. Combination anterior forefoot medial and lateral imbalance.

In the past most of the diagnosis of forefoot imbalance had been done on a clinical basis either by physical examination or

*An award winning paper, Wm. J. Stickel Awards for Research in Chiropody, 1956.

by use of a positive plaster cast. X-ray is the confirmation or denial of a clinical impression.

Much work has been done by Dudley Morton on forefoot imbalance, but he considered only the first metatarsal segment and disregarded the lesser metatarsals. He put all of the emphasis of diagnosis of forefoot imbalance upon the short first metatarsal with relative little mention of the lengths of the lesser metatarsals. Felton O. Gamble classified the variations of metatarsal length discrepancy.

We are interested in the functional foot, and the weight bearing motions that the foot goes through during walking. A cast taken in the recumbent position, static position or weight bearing position cannot be balanced because the bones of the foot change their relationship to one another. The cast gives a false impression of the true functional foot shape. We forget that pronation may have changed the foot by compensation and/or decompensation (Wolf and Davis laws). Inlays made over a cast do not always give a true picture of the function of forefoot in walking and weight distribution. They should be used only for dimensions of width, length, and plantar shape and outline of the foot.

With the use of the cast in acquiring the shape of the inlay, and the x-ray film which is diagnostic for evaluating the metatarsal length discrepancy, we can balance the forefoot by compensating for long or short metatarsals. This is done by pads of 1/8th to 3/16th of an inch thick. Their shapes and contours follow.

The foot is an organ of locomotion. When an organ is out of balance and not at rest or in accordance to a normal balance it must be compensated for.

Decompensation is failure of an organ to compensate (to make good a deficiency or restore balance, after failure of an organ or a part of an organ). An unbalanced metatarsal length pattern with a discrepancy of length which fails to compensate will result in decompensation of the forefoot; resulting in forefoot failure.

The following are some variant metatarsal parabolas with suggested pads to produce better weight distribution. In each case the illustration shows the relationship of the standard arc to the actual variant illustrated. Superimposed is the outline of a suggested diffusion cushion.

Normal Metatarsal Length Pattern

There may or may not be any symptoms. Treatment, when indicated, might incorporate the metatarsal pad. This is illustrated in Fig. 1.

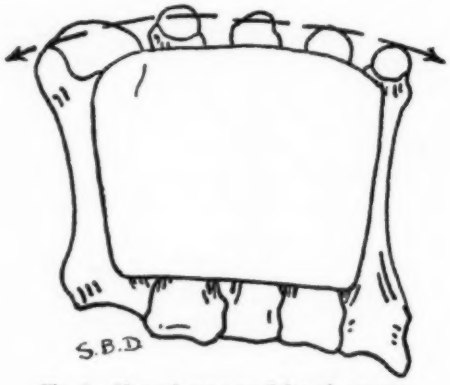

Fig. 1. Normal metatarsal length pattern

Long Second Metatarsal

Findings:

a. Short first metatarsal. b. Long second metatarsal extending beyond the metatarsus parabolic arc. No thickening or hypertrophy of shaft or cortical thickening. c. Normal position of sesamoids. d. No hypermobility of first segment. e. Medial cuneiform in normal position and relationship to other bones. f. Compensation occurs without decompensation, forefoot failure or imbalance.

Because of good muscle tone in the feet and legs the musculature is able to suspend, in the soft tissues, the second metatarsal heads and so balances the weight distribution of the forefoot. However, if in this type of a foot there is muscular weak-

ness and loss of muscle tone, decompensation takes place, the weight shifting to the second head. Decompensation produces an anterio-medial forefoot imbalance (Morton's Syndrome). Fig. 2.

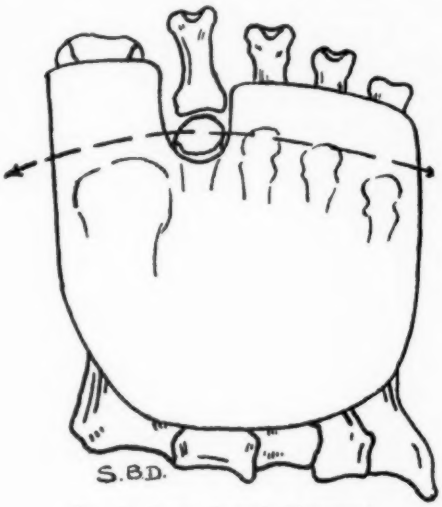

Fig. 2. Long Second Metatarsal

Morton's Syndrome

(Anterior medial forefoot imbalance, medial instability)

Findings:

a. Atavistic short first metatarsal. b. Posterior displacement of sesamoids. c. Long second metatarsal extending beyond the metatarsus parabolic arc. d. Hypertrophy of shaft of second by cortical thickening, sometimes complete obliteration of the medullary structure. e. Hypermobility of first segment. f. Navicular rotated medially and plantarward due to contracture of the Proneus Longus tendon with foot in an attitude of pronation. g. Decompensation with h. Forefoot failure and medial instability. i. Imbalance with antero-medial forefoot imbalance.

Antero-medial forefoot failure is due to decompensation and weight shift along the variant metatarsus parabola with concentration of weight at the second metatarsal head. The first metatarsal rotates on its long axis medio-plantarward and the foot may assume a pronated position. Plantar and varus deviation of the phalanges of the fourth and fifth toes occurs. In order for the weight to be balanced the fourth and fifth digits may transmit the weight for the fourth and fifth metatarsal heads, which are not carrying their quota of the 2-1-1-1-1 ratio (Morton). Compensating pad restores balance of forefoot. Fig. 3.

Fig. 3. Morton's Syndrome

Pseudo Short First Due to Hallux Valgus

(Anterior Medial Forefoot Imbalance, Medial Instability)

The first metatarsal may be an atavistically short or due to the medial deviation it may appear short (pseudo).

a. Second metatarsal head extends beyond the metatarsus parabolic arc, varus deviation of the first metatarsal.

b. Valgus deviation of the proximal and distal phalanges of the first toe.

c. Widening of articular space between the medial cuneiform and middle due to rotation and hypermobility of the first segment.

d. Sesamoids may be displaced proximally, distally, or laterally towards the first intermetatarsal space.

e. Hypertrophy of shaft of second.

f. Overlapping of the first and second toes, depending upon the degree of the hallux valgus.

g. Decompensation.

h. Forefoot failure.

i. Imbalance.

The antero-medial forefoot imbalance with medial instability causes forefoot failure due to decompensation and weight shift along the altered in-constant metatarsus parabola, with concentration of weight at the second metatarsus head. The first metatarsal is rotated and deviated medialward on its long axis; the foot assumes pronation.

There may be varus deviation of the fourth and fifth digits with plantar deformity, due to the attempt of the toes to counter-compensate. By Wolf and Davis Laws the weight must be carried by the fourth and fifth digits accounting for the structural changes. There is then a disturbance of the Morton's ration of balance.

Diffusion cushion to restore balance of forefoot is shown in Fig. 4.

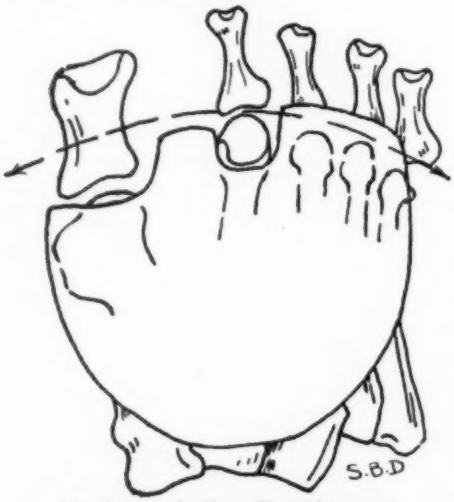

Fig. 4. Pseudo Short First Metatarsal

Short First and Second
(Anterior Medial Forefoot Imbalance, Medial Instability)

Findings:

Metatarsal length pattern shows short first and second metatarsals.

a. Third, fourth, and fifth meta heads extend beyond metatarsus parabolic arc. b. Hypermobility of first and second metatarsal segments. c. Medial rotation of shafts of the first and second metatarsals. d. Short first and second metatarsals predispose to hallux valgus. e. Valgus deviation of the first and second digits. f. Hypertrophy of shafts of third, fourth and fifth metatarsals. g. May develop over-lapping of the second and third digits.

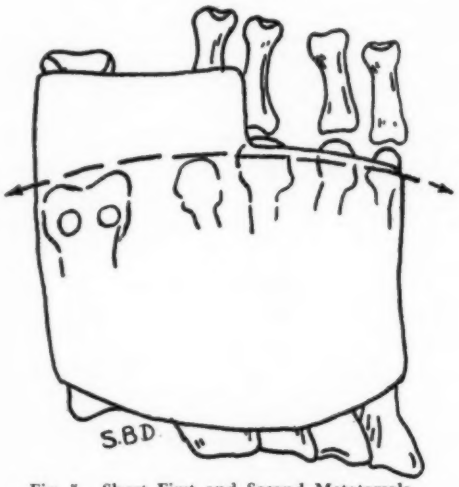

Fig. 5. Short First and Second Metatarsals

Anterior medial forefoot imbalance with medial instability due to decompensation. Failure is due to weight shift along the altered inconstant metatarsus parabola with concentration of weight on the heads of the third, fourth and fifth metatarsals. Medial imbalance of the first and second metatarsals which causes the foot to go into pronation, predisposing to hallux valgus. The first and second toes may deviate into valgus and varus respectively, carrying the weight of their metatarsal.

Diffusion cushion to restore balance of forefoot is shown in Fig. 5.

Short First, Second and Third

(Anterior Medial Forefoot Imbalance, Medial Instability)

Findings:

Metatarsal length pattern—short first, second and third.

a. The first, second and third metatarsals do not extend to the arc of the metatarsus parabola.

b. Hypermobility of the first, second, and third metatarsal segments.

c. There may be medial rotation of the first, second or third metatarsals.

d. Valgus deviations of the first segment predisposing formation of a hallux valgus.

e. Hypertrophy of shafts of the fourth and fifth metatarsal shafts.

f. May develop overlapping of the first, second or third digits.

Antero-medial forefoot imbalance with medial instability. Forefoot failure is due to weight shift along the altered inconstant metatarsus parabola with concentration of weight on the fourth and fifth metatarsal heads. Medial imbalance of foot is due to short first, second, and third metatarsals; this will cause the foot to go into pronation.

Compensating pad to restore balance of forefoot is shown in Fig. 6.

Fig. 6. Short First, Second and Third Metatarsals

Metatarsus Proximus

(Combination Medial and Lateral Imbalance, Central Instability)

Findings:

a. Congenital long second and third metatarsals.

b. Long second and third metatarsals extend beyond the metatarsus parabolic arc.

c. The second and third metatarsals rotated toward one another, appearing as though the metatarsal heads were touching (actually they do not) with apparent bowing of shafts.

d. The phalanges of second and third toes deviate from each other.

e. Hammer toes (plantar deformities) of second or third toes or both.

f. Lateral bowing of the fourth and fifth metatarsal shafts.

g. Adventitious bursa forms under the second and third metatarsal heads and frequently a heavy callous.

h. Arthritis must be ruled out. (Dupuytren's contracture Pedis)

i. Medial deviation of the fourth and fifth digits.

Combination medial and lateral imbalance with central instability. The forefoot failure is due to decompensation and a weight shift along the altered inconstant metatarsus parabola with a concentration of weight at the second and third metatarsal heads. The foot changes countercompensation for balance causes digits to assume their attitudes of deformity. This accounts for the claw-like positions of the fourth and fifth toes.

Hammer toeing is an attempt to stabilize the forefoot, to prevent the foot from rocking from side to side. This imbalance is comparable to two legs of a table being short.

Diffusion cushion shown in Fig. 7.

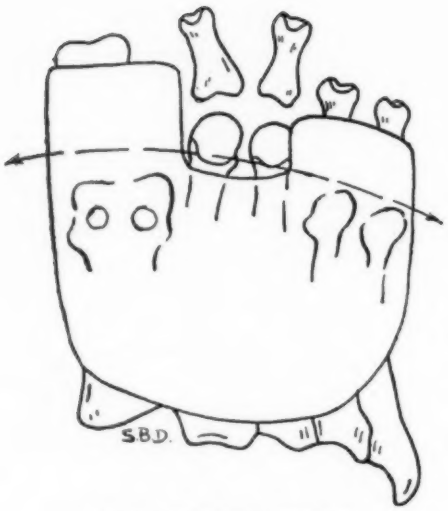

Fig. 7. Metatarsus Proximus

Long Second and Third

(Combination Medial and Lateral Imbalance, Central Instability)

Findings:

a. Congenital long second and third metatarsals.

b. Second and third metatarsals extend beyond the metatarsus parabolic arc.

c. Lateral bowing of fourth and fifth metatarsal shafts.

d. Medial deviation of the fourth and fifth toes.

Combination medial and lateral imbalance with central instability. The forefoot failure due to decompensation and a weight shift along the altered inconstant metatarsus parabola with a concentration of weight at the second and third metatarsal heads. Counter-compensation for imbalance causes the digits to change their normal attitude to counter-balance the foot. This accounts for the claw-like fourth and fifth toes, tending to prevent foot from rocking from side to side.

Compensating pads are illustrated in Fig. 8.

Short First and Fifth

(Combination Anterior Medial and Lateral Forefoot Imbalance, Central Instability)

Findings:

a. Congenital long second, third, and fourth.

b. The heads of the second, third, and fourth metatarsals extend beyond the metatarsus parabolic arc.

c. The second metatarsal deviates medialward.

d. The third metatarsal deviates lateralward.

e. The fourth metatarsal deviates lateralward.

f. The fifth deviates lateralward.

g. Hypertrophy of the shafts of the second, third, and fourth; with accommodative bowing due to concentration of weight.

h. Atrophy of disuse of the fifth metatarsal shaft.

i. Phalanges of the second and third toes present plantar deformity toward one another.

j. Medial or lateral plantar contraction of the fourth and fifth toes.

k. Adventitious bursa forms with callous under the second, third, and fourth metatarsal heads.

Fig. 8. Long Second and Third Metatarsals

Combination medial and lateral imbalance with central instability. The forefoot failure is due to decompensation and a weight shift along the altered inconstant metatarsus parabola with concentration of weight at the second, third, and fourth metatarsal heads. The foot changes to compensate for imbalance causing the digits to change their normal direction to counter-balance the forefoot.

This accounts for the claw-like deformity. The hammer toes help stabilize the forefoot in order to prevent the foot from rocking from the medial to the lateral sides of the foot.

Fig. 9 shows compensating pad for this condition.

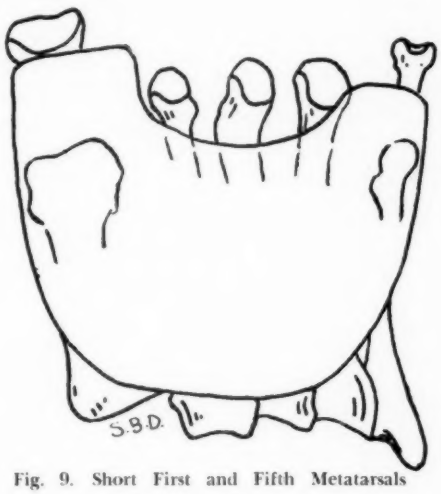

Fig. 9. Short First and Fifth Metatarsals

Long First

(Anterior Lateral Forefoot Imbalance, Lateral Instability)

Findings:

a. First metatarsal head extends beyond metatarsus parabolic arc.

b. First metatarsal—hypertrophied.

c. Usually a bursa is found or a heavy callous under head of first metatarsal.

d. Sesamoiditis may be present.

e. First metatarsal may be rotated on the long axis, medially.

f. The shafts of the lesser metatarsal may rotate medially or laterally with accommodative bowing.

g. The digits assume medial deviation with plantar contraction and deformity.

In anterior lateral forefoot imbalance with lateral instability, the forefoot failure is due to decompensation. Weight shifts along the altered inconstant metatarsus parabolic arc with concentration of weight at the head of the first metatarsal. The foot goes into adduction. There is plantar contraction of the lesser toes medialward. Again digits are contracted to assist in weight redistribution.

Diffusion cushion to restore balance of the forefoot is shown in Fig. 10.

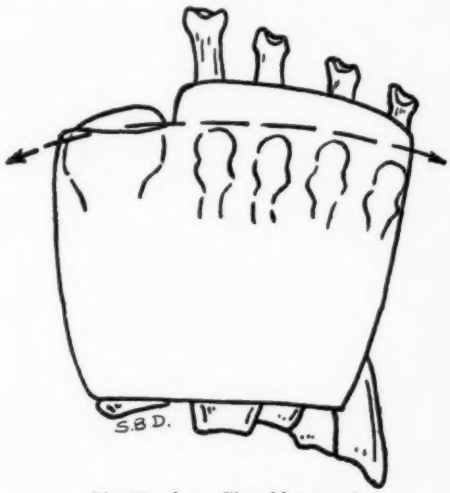

Fig. 10. Long First Metatarsal

Long First and Second

(Anterior Lateral Imbalance, Lateral Instability)

Findings:

a. Metatarsals, first and second heads extend beyond the metatarsus parabolic arc.

b. The first and second metatarsal shafts are usually hypertrophied.

c. Bursa or callous or both may be present at the heads of first or second.

d. Sesamoiditis may be present.

e. The shafts of the lesser metatarsal

may be rotated medially or laterally with accommodative bowing.

f. The phalanges of the third, fourth and fifth toes assume medial deviation with plantar contraction and deformity.

In anterior lateral forefoot imbalance with lateral instability the forefoot failure is due to decompensation. The weight shifts along the altered inconstant metatarsus parabolic arc with concentration of the weight transmission at the heads of the first and second metatarsals. The forefoot assumes adduction. There is plantar contraction of the lesser phalanges medialward. The phalanges contract to stabilize weight distribution.

Compensating pads to restore balance of forefoot shown in Fig. 11.

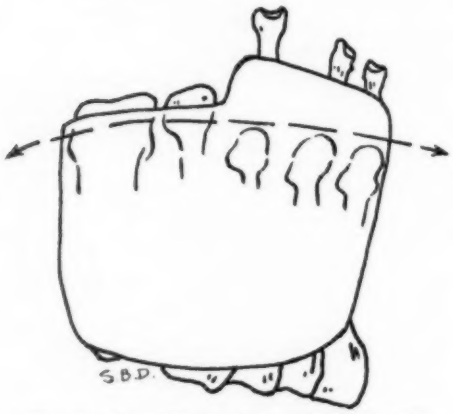

Fig. 11. Long First and Second Metatarsals

Long First, Second, and Third or Short Fourth and Fifth

(Anterior Lateral Forefoot Imbalance, Lateral Instability)

Findings:

a. Congenital long first, second, and third or it could be called short fourth and fifth metatarsals.

b. The first, second, and third metatarsal heads extend beyond the metatarsus parabolic arc.

c. The shafts of the first, second, and third metatarsals may or may not be hypertrophied.

d. A heavy callous may be present under the first, second, and third metatarsal area.

e. The shafts of the fourth and fifth metatarsals may deviate laterally. Atrophy of disuse and accommodative bowing may be present.

f. The phalanges of the fourth and fifth toes assume medial deviation with plantar contraction and deformity.

In anterior lateral forefoot with lateral instability the forefoot failure is due to decompensation of balance and a shift of weight along the altered inconstant metatarsus parabolic arc. Concentration of weight at the heads of the first, second, and third metatarsal heads. The forefoot assumes adduction. There is plantar contraction of the fourth and fifth phalanges medialward. The digits contract to stabilize weight distribution.

Compensating pad to restore balance of forefoot is illustrated in Fig. 12.

Fig. 12. Long First, Second and Third Metatarsals or Short Fourth and Fifth Metatarsals

Short Fourth

(Antero-Lateral Forefoot Instability)

Findings:

a. Short fourth. The fourth metatarsal does not extend to metatarsus parabolic arc.

b. May be due to underdevelopment of the centers of ossification or the epiphyseal plate.

c. Frostbite may produce this condition

in early childhood due to impairment of circulation.

d. True congenital variation. It is a normal anomaly.

Compensating pad to restore balance is shown in Fig. 13.

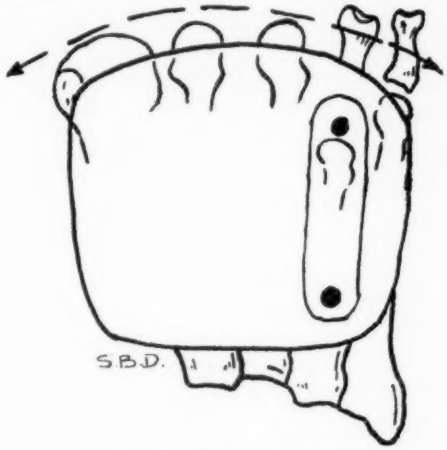

Fig. 13. Short Fourth Metatarsal

Short Fifth Metatarsal

(Antero-Lateral Forefoot Imbalance Lateral Instability)

Findings:

a. Congenital short fifth metatarsal.

b. The fifth metatarsal does not extend to the metatarsus parabolic arc.

c. There is lateral deviation of the fifth metatarsal.

d. Accommodative bowing of shaft of the fifth.

e. Atrophy of disuse of shaft of the fifth metatarsal.

f. Medial deviation of the fifth phalanges sometimes in plantar contraction and hammer toe.

g. Predisposition to tailors bunion.

This forefoot failure is due to decompensation of balance and a shift of weight along the altered inconstant metatarsus parabolic arc. The fifth digit assumes plantar contraction to stabilize weight distribution.

Fig. 14 illustrates compensating pad to restore balance of forefoot.

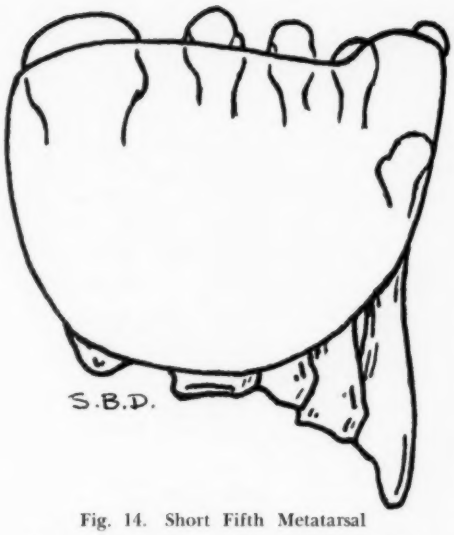

Fig. 14. Short Fifth Metatarsal

NOTE: Any of the illustrated diffusion cushions can be incorporated in all inlays and plantar molds. Usually 1/8" to 3/16" is sufficient thickness.

Summary

A principle of forefoot weight distribution (and transmission to weight bearing surface) is stated to be the arc of the metatarsus parabola deviates directly with any inconsistency in the metatarsal lengths and the regular weight distribution pattern varies accordingly.

A classification of these variants is offered. Suggestions are made for various patterns of "diffusion cushions" (pads) which will tend to restore "balance" for each of these variants.

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ROENTGENOLOGICAL CONSIDERATION OF THE METATARSUS

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Part II

Infections Involving the Metatarsal Bones

Primary infection of bone is produced by pyogenic micro-organisms, chiefly staphylococcus, reaching the bone by way of the blood stream. The earliest evidence of low grade osteomyelitis is the presence of slight periosteal elevation. Radiographically, osteomyelitis is differentiated by: a. Variable amount of destruction of medullary and cortical areas . . . rarely extending beyond the epiphyseal line. b. Extensive periosteal reaction in later stages. c. Sequestration and irregular sclerosis of bone. Proliferation of the periosteum occurs as the result of irritation beneath it, and as the process increases, leading ultimately, to the formation of a shell of new bone, the involucrum about the necrotic mass of the old shaft, which then becomes a sequestrum. The density of the living bone increases as the disease heals and function is resumed.

Tuberculosis

Osseous tuberculosis may be primary in the bone structure, or secondary from some other focus in the body such as arthritis or pulmonary tuberculosis.

Tuberculosis is considered as the great bone destroyer. Diaphyseal tuberculosis affects the short bones of the hands and feet in very young children, and is occasionally seen in the metatarsals. This type is characterized by the formation of granulomatous masses. When these invade bone, they destroy not only by liberation of bacterial toxins, but by pressure of these invading granulomatous masses. In children where the cortical structure is soft, expansion of the bone may occur. If the bony cortex is firm, as in adults, necrosis occurs.

There is extensive bone destruction. Occasionally TB granulations will develop in the subperiosteal region, elevating the periosteum and causing mechanical stimulation of this tissue. One of the characteristic details of this condition, radiographically, is its resemblance to a bag-like structure encasing the bone.

Syphilis

Syphilis is considered to be a great bone producer. Acquired syphilis of bone is essentially a tertiary lesion, and is seldom seen until the disease is at least 18 months old. It affects the shafts of the long bones. In the early stages the lesion is usually a periostitis and radiographically, is characterized by the lace-work type of periosteal reaction. Syphilitic periostitis consists of short spicules of newly formed bone radiating outward perpendicular to the shaft, and bending backward in loops producing a lace-work appearance. Syphilitic osteitis affects the cortex and is the forerunner of gumma formation.

Nutritional Diseases Affecting Metatarsal Bones

During the active stage of development, usually during adolescence, certain changes take place within the epiphyseal structures of various epiphyses, the nature of which is not clearly understood. It is thought by some authorities that this is a local nutritional disturbance complicated by other factors; the epiphyses become softened and undergo quiet necrosis, with fragmentation and disintegration of bone. In this category of the osteochrondritities we find:

Freiberg's Infraction of the 2nd metatarsal head. The radiographic picture is familiar to every chiropodist . . . flattening

of the 2nd meta head, widening of the joint space, areas of bone absorption in the head, together with bone condensation.[6]

Occasionally we may see a similar aseptic necrosis affecting the heads of the 3rd or 4th metatarsal bones. Several cases have been reported of necrosis of the inconstant epiphysis at the proximal end of the 1st metatarsal bone.

Rickets is a nutritional disturbance due to vitamin D deficiency occurring usually during the first 3 years of life, and is characterized by marked changes in the calcium content and epiphyseal structures of bones.

Roentgenological analysis of the picture of fully developed rickets: a. no actual bone destruction. There may be extreme degree of osteoporosis; b. occasional periosteal reaction; c. disease originates at the epiphyseal line; d. ends of long bones are enlarged . . . meta heads and bases; e. haziness and cupping of diaphyseal side of epiphyseal lines; f. bowing of shaft of bone with thickening of cortex of the concave side, and thinning of cortex on convex side (femur and tibia); g. occasional spontaneous fractures through medullary portion of bone. The cortex fractures only through trauma; h. no bone expansion nor invasion of the soft parts.

Metabolic Disturbances Affecting the Metatarsals

Gout will be discussed under the arthritides.

Parathyroidism: Among the diseases believed to be connected with parathyroidism are the following osteomalacic diseases which occasionally produce bone lesions in the metatarsus:

a. Osteitis Fibrosa Cystica (von Recklinghausen's disease): The charactertistic findings are: generalized bone decalcification with localized areas of increased bone density, and localized or generalized cystic formation.

b. Solitary Bone Cyst: is seen in metatarsal bones in children between 8 and 16 years and in early adult life. This condition will be described under Tumors.

c. Polystatic Fibrous Dysplasia (pseudo fractures): Multiple areas of rarefaction develop transversely like bands across the shaft of the bone. The lesion presents an appearance as if a thin section of bone has been erased. The bone architecture on either side of the defect is not disturbed, and is in perfect alignment. This factor will distinguish this condition from a true fracture.

d. Osteitis Deformans (Paget's disease): is a chronic deforming lesion of the skeleton characterized by simultaneous absorption of old bone and the formation of new, pathologic bone in the same field, developing in thickenings and curvatures. It is uncommon in the bones of the feet.

Metatarsal Affections Due to Trauma

Fractures of the metatarsals are common. They are usually caused by the fall of heavy objects on the foot.[7]

Types: Complete, Incomplete and Comminuted. Oblique, Transverse, Spiral, T or Y shaped; *Sites:* Through neck, shaft, 5th tuberosity or base.

Dislocations of the metatarsal bones are not frequent, except as the result of severe trauma to the rest of the foot. We occasionally see metatarsophalangeal dislocations.

Other Effects of Trauma:

a. Freiberg's Infraction of the 2nd meta head. Due to the normal elongation of the 2nd head, trauma is believed to be a contributing factor in this disease.

b. Post Traumatic Acute Bone Atrophy (Sudeck's atrophy): A somewhat rare condition in which practically all the bones of the foot undergo acute atrophy after slight or severe injury, even distal to the site of the trauma. The etiology is vague, but it is believed to be due to injury to the trophic nerves controlling the blood vessels thus affecting the blood supply to the bones.[8] Clinically, the condition has an

acute onset a few days after the trauma. Characteristic appearance: swelling of foot, extreme pain, limitation of motions, skin is thin, shiny and perspires profusely. Radiographic examination of the metatarsal area reveals an extreme degree of bone atrophy or osteoporosis, a pencilled outline of bone, similar to, but much more pronounced than disuse atrophy. The cancellous portion of bone appears as a spotty, moth-eaten, hazy area. Sudeck's atrophy can be differentiated from ordinary osteoporosis by the early atrophy and thinning of the articular cartilage. The pain also becomes extreme with immobilization.

c. Multiple Spontaneous Idiopathic Symmetrical Fractures: A condition which, through a rarefying process, results in bone fractures from trivial trauma. Etiology is unknown, but thought to be of neurogenic origin. Radiographically, the bones do not show rarefaction sufficient to cause fractures.

d. March Fracture: In this condition there is usually no history of direct trauma, and seldom can a fracture line be seen in the radiograph. At the onset of symptoms, the X-ray is negative. After 3 to 4 weeks, a hazy, ring-like formation is seen encircling the fracture line. Radiographically, March fracture is characterized by a localized prolific overgrowth of periosteal new bone related to the insertion of the interosseus muscles.[9] This new bone formation is often erroneously diagnosed as syphilitic periostitis or even osteogenic sarcoma.

e. Calcium Deposits in Ligaments, Bursae and Tendons: Many extra skeletal tissues are subject to calcium deposits, and are the result of chronic irritation or trauma. In the metatarsal region of the foot we may find calcareous deposits within the bursae overlying the 1st metaphalangeal joint, or in the intermetatarsal bursae. They appear as dense, white deposits, lacking the appearance of bone. Ligamentous tears associated with fractures may lead to excessive calcification within the ligamentous fibres.

f. Myositis Ossificans is a condition, occasionally encountered in the metatarsal area, in which calcifications occur in the muscle striations of the interosseous muscles. It follows trauma resulting in interstitial muscle hemorrhage. In place of absorption and restoration of function, the blood undergoes ossification and calcification, resulting in replacement of the muscle with bone. This process of ossification does not occur in tendons.

g. Phleboliths are small calcified thrombi in the walls of veins.

h. Arterial Calcifications are commonly seen in the intermetatarsal arteries, and is associated with arteriosclerosis.

i. Acute Synovitis is frequently seen in the 1st metaphalangeal joint as the result of trauma, and is accompanied by effusion. Where infection is present and purulent material is within the joint space, the normal outlines of the joint are lost, and there may be local decalcification.

j. Osteitis: Repeated trauma to a metatarsal bone, depending on the amount of trauma and length of time, may be manifested in either: a) Condensing, b) Rarefying Osteitis.

Osteitis Condensans is commonly seen in the head of the 1st meta bone following an inflammatory process in this area. The bone appears dense white. It is a progressive periosteal thickening leading to alterations in the cortical density due to the deposition of calcium.[10]

Osteitis Rarefactis is a condition seen in the first metatarsal head where there is a diminution of normal bone density by partial demineralization. The area appears honeycombed.

k. Periostitis is seen in the metatarsals, and is a thickening of the periosteum due to abnormal stress of the interosseous muscles.

(Parts III and IV will appear in June and July issues)

FACTORS IN THE USE OF THE X-RAY MACHINE

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Part II

Variable Factors in X-Ray

The early tubes were dependent upon the ionization of the gas within the tube as a source of electrons. This proved to be rather a hit-or-miss affair. At times abundant electrons were available providing more x-rays than were anticipated. This generally resulted in an overexposure. At other times insufficient electrons were released by the ionization process resulting in an underexposure. The operator could never be sure when a radiograph was being made as to which situation would exist. Then too the induction motor created potentials which varied according to the speed with which the hand crank was turned, (this was later overcome with the introduction of generated electricity of the type we are familiar with today). This altered the penetrating quality of the rays.

Today with the unvarying electrical energy source and with the advent of the hot cathode tube, we know beforehand exactly the quantity and penetrating ability of the x-ray beam. It is possible therefore to control our radiographic results in much the same manner as the commercial photographer may control the exposure when taking a picture.

Basically there are four variable factors which we must learn to control and manipulate to produce the best radiographic results. When these factors are in complete balance we obtain a film which exhibits the best contrast and definition for the part. This is termed the optimum photographic effect. The photographic effect, or P.E. as it is more generally known, has a value which may be expressed numerically. This value remains the same for each area to be radiographed irrespective of the manipulations necessary, that is to say manipulation of the four variable factors.

The four variable factors in radiography are: milliamperage, kilovoltage, time and distance. Before we have a complete understanding of how these factors combine to produce a good radiograph, an understanding of the role that each plays in its makeup should be discussed first. In so doing it may help if we relate the x-ray factor to light. As previously stated, good radiography and photography are akin.

Milliamperage (the quantity of x-rays) in many respects is similar to the amount of light by which the photographer takes his picture. The higher the milliamperage, the more light we may assume is exposing our films, the lower the milliamperage, the less the light. The kilovoltage may be likened to the battery which is producing the light. The higher the kilovoltage, the stronger the battery we may compare it to. A stronger battery of course means a stronger, brighter beam of light. The lower the kilovoltage, the weaker the battery and of course the weaker the light. Time and distance are identical in both photography and radiography. The farther we move from the light source, the weaker the light becomes. By the same token, the farther we move from the point from which the x-rays emanate, the weaker the x-ray beam becomes. As for the time we might simply state that the longer the film is exposed to the light source, the greater the photochemical change on the emulsion (the darker it becomes).

Careful attention to the above will show that an interdependence exists between the variable factors. This interdependence is used by the operator to achieve the proper P.E.

Let us examine at this time the relationships between time, distance and milliamperage. Later we shall relate the role that

kilovoltage plays in attaining the proper P.E. The three variables mentioned above are correlated in accord to the inverse square law which is a direct consequence of the rectilinear propagation of light. The inverse square law states that illuminance on the surface is proportional to the luminous intensity of the light source and is inversely proportional to the square of the distance.

Illuminance is defined as the amount of light falling on a unit area. From this we may conclude that illuminance is the product of milliamperage and time, i.e. milliamperage times the time.

Perhaps it would simplify things were we to state that time and milliamperage are inversely proportional to each other. That is to say that as one increases, the other must decrease. For example, if a technique calls for a film to be taken at 20 milliamperes for one second, we would have to double the time (two seconds) if we cut the milliamperage in half (ten milliamperes). From this it can be seen that the product of the Ma times the Time is the same for both cases. Herein lies the first rule that we must adhere to. The milliampere seconds must be equal in all cases. On most technique charts the milliampere seconds are designated as MaS.

From the inverse square law we see that the illuminance is inversely proportional to the square of the distance. This means that if for a given technique the target to film distance is, for example, 28 inches and we wish to use a 32-inch target to film distance, we must increase the luminous intensity of the rays in order to compensate for the increased distance. Let me now give you some examples of how time, distance and milliamperage may be manipulated to permit a change in factors without altering the end result.

The three variables give rise to three relationships:

Time and Distance
Time and Milliamperes
Distance and Milliamperes

Let us use the letter "S" to designate Time, the letter "D" to designate Distance and the letters "Ma" to designate Milliamperes. Now assume that we are confronted with a technique that calls for a film to be taken at 36-inch distance 40 Ma at 1 second. Let us further assume that the machine which we are using can only take films as a maximum of 20 Ma. This is comparable to an attempt to take a picture in deep shadow instead of bright sunlight. Nevertheless it can be done very simply. First after recognizing that this is a problem which involves Ma, we have two courses open, either we can make this an Ma Time relationship, or an Ma Distance relationship. In the first case (Ma, time) we are dealing with an inverse proportionality. In the second case (Ma, distance) we are dealing with a direct proportionality. If we decide on the first case, the problem may be formulated in this fashion:—

$$\frac{\text{old Ma } (40)}{\text{new Ma } (20)} = \frac{\text{new S } (x)}{\text{old S } (1)}$$

by cross multiplication we get

$$x = \frac{40 \text{ MaS}}{20 \text{ Ma}} \text{ or } x = 2 \text{ seconds}$$

therefore we may take this picture at 20 Ma for 2 seconds and achieve the same results as we would have had had we used 40 Ma for 1 second.

For the second case the problem would be formulated in this way:

$$\frac{\text{old Ma } (40)}{\text{new Ma } (20)} = \frac{\text{old D}^2 \ (36)^2}{\text{new D}^2 \ (x)^2}$$

by cross multiplication we get

$$x = \sqrt{\frac{20 \times 36^2}{40}} \text{ or } x = 25.4 \text{ inches}$$

From this problem we can see that it is

possible to take this film at 20 Ma for 1 second (time was unaltered and did not enter into this problem), if the distance is reduced to 25.4 inches.

There still remains one relationship to consider (Time-distance). To see how we may apply this relationship, let us take the factors in the aforementioned case (40 Ma-1 sec.—36 inch Dist.) and let us assume that the machine we are using can be used at a maximum target to film distance of 28 inches. This means that to compensate for the reduced distance, we must proportionately reduce one of the other variables. In this illustration, we are using Time. Once again we formulate the problem:

$$\frac{\text{old } D^2 \ (36)^2}{\text{new } D^2 \ (28)^2} = \frac{\text{old S } (1)}{\text{new S } (x)}$$

by cross multiplication we get:

$$x = \frac{(28)^2 \text{ X } 1}{(36)^2} \text{ or } x = .6 \text{ seconds}$$

From this then we may alter our factors so that the film may be taken at 28-inch distance, 40 Ma and .6 seconds.

To sum it up, it can be seen that from the three aforementioned relationships, each of the variables may be involved in two equations. This gives the operator a choice as to which factor he wishes to change should the necessity arise. The six equations are as follows:

(1) Time — $\dfrac{\text{old time}}{\text{new time}} = \dfrac{\text{old Dist}^2}{\text{new Dist}^2}$

$$\frac{\text{old time}}{\text{new time}} = \frac{\text{new Ma}}{\text{old Ma}}$$

(2) Ma — $\dfrac{\text{old Ma}}{\text{new Ma}} = \dfrac{\text{new time}}{\text{old time}}$

$$\frac{\text{old Ma}}{\text{new Ma}} = \frac{\text{old Dist}^2}{\text{new Dist}^2}$$

(3) Distance — $\dfrac{\text{old Dist}^2}{\text{new Dist}^2} = \dfrac{\text{old Ma}}{\text{new Ma}}$

$$\frac{\text{old Dist}^2}{\text{new Dist}^2} = \frac{\text{old time}}{\text{new time}}$$

The role that kilovoltage plays may best be illustrated by explaining the computation of P.E. As was previously mentioned, the P.E. has a numerical value. This value must never alter even though the variable factors are changed to suit the conditions under which a film is to be taken. Unlike the other factors which are altered without the value of the P.E. entering into the calculations directly, the kilovoltage or, KV as it is more commonly known, is always computed by directly involving the value of the P.E.

Exposure technique charts when giving the factors to be used for a certain technique are without doing so directly, giving the optimum P.E. You see it is the P.E. which determines what these factors shall be. This can be likened to the recommended factors which one would use when taking a snapshot. If these factors are adhered to the resulting picture will be sharp and clear. Of course this means that the over-all photographic effect is the best which the instruments we are working with can produce.

To illustrate this further, let us take some hypothetical exposure factors, compute the P.E. and then see how we may vary the KV or other variables without changing the value of the P.E.

$$\text{P.E.} = \frac{\text{Ma X S X KV}^2}{\text{D}^2}$$

If: Ma = 20
S = 2
D = 28
KV = 50

Therefore: $\text{P.E.} = \dfrac{20 \text{ X } 2 \text{ X } (50)^2}{(28)^2}$

P.E. = 127.5

We now have a numerical value for the P.E. This value (127.5) must not change for this technique even though we alter the factors to suit conditions. To carry the illustration further, let us suppose that we wish to use only 40 KV when taking this film. In order to maintain the value of the P.E. we must then correspondingly change either our milliampere seconds or our distance. The choice as to which to alter remains with the operator. Assuming that we are going to alter the MaS we would set the problem as follows:—

$$\text{MaS} = x$$
$$\text{D} = 28$$
$$\text{KV} = 40$$
$$\text{P.E.} = 127.5$$

$$\text{If: P.E.} = \frac{\text{MaS X (KV)}^2}{\text{(D)}^2}$$

$$\text{Then: } 127.5 = \frac{x \text{ X } (40)^2}{(28)^2}$$

$$x = \frac{127.5 \text{ X } (28)^2}{(40)^2}$$

$$\text{Or: } x = 61.4$$

Therefore the new MaS is 61.4 which is the same as 20 Ma for 3.07 sec. or 60 Ma for 1.2 sec.

Let me emphasize at this time that the operator could have left the MaS as presented in the original factors and altered the distance to suit the change in KV. Without going into the arithmetic the equation would have been set up in the following manner:

$$\text{D} = \sqrt{\frac{\text{MaS X (KV)}^2}{\text{P.E.}}}$$

And now let us see how the KV may be altered without a change in the P.E. Before illustrating this we should take cognizance of the fact that the kilovoltage is the most stable of all our variable factors and therefore rarely subject to change. However the mere fact that it can be changed warrants its explanation and of course lends to a better understanding of x-ray and its governing factors.

For this final illustration let us use a new set of factors with a new P.E. Let us further assume that the machine we are using is capable of using all the factors given with the exception of the distance. The given factors are:—

$$\text{MaS} = 20$$
$$\text{KV} = 75$$
$$\text{D} = 42$$
$$\text{P.E.} = 63.7$$

Since the 42-inch distance would be awkward, or otherwise uncomfortable for the operator, the operator has decided to alter the distance so that it is reduced to 36 inches. The problem now is what KV to use at this reduced distance. To determine that we will use the formula for the determination of P.E. and substitute x in the place occupied by KV and then solve for x.

$$\text{P.E.} = \frac{\text{MaS X (KV)}^2}{\text{(D)}^2}$$

$$63.7 = \frac{20 \text{ X } (x)^2}{(36)^2}$$

$$x^2 = \frac{63.7 \text{ X } (36)^2}{20}$$

$$x = \sqrt{\frac{63.7 \text{ X } (36)^2}{20}}$$

$$x = 64.1$$

Therefore, the new KV is 64.1 at a 36-inch distance. All other factors remain the same.

We have now seen how the powerful forces which the x-ray machine can unleash may be delicately controlled and made to work for our benefit. If strict adherence to the principles evolved here is heeded, there will never be any doubt in the mind of the operator as to whether the film he is about to take will be anything but the very finest.

(Parts III & IV will appear in June and July issues.)

AN INTRODUCTION TO ULTRASONIC ENERGY FOR THERAPY*

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History

As EARLY as 1880, some seventy-five years ago, Pierre Curie and his brother Jacques discovered the effect of the quartz crystal, calling it the piezo-electric effect.

Thirty-five years later in 1917, Langwin developed Sonar, the remarkable underwater detecting of World War II, and built an ultrasonic machine.

Wood and Loomis published their work on "Physical and Biological Effects of High Frequency Sound Waves of Great Intensity" in 1927. This start of biological research reported that the fantastic beam was so powerful that it could rupture red blood cells, kill small fish and frogs, and tear water plants into tiny fragments.

While these Americans were reporting their basic findings, two Germans were excitedly announcing the first trial of ultrasound in disease. On theoretical grounds, they had thought the ultrasonic beam might be useful in "shaking loose" the "frozen" earbones in chronic deafness; in practice they found the results "astonishing" and "remarkable."

Unfortunately, it was determined by later and more careful study that the "improvement" was not permanent, and the deaf patients remained deaf, no matter how many treatments they received. This was a tragic disappointment for all. It also gave medical ultrasonics a bad name, which lasted for more than ten years.

In 1932 Erwin Schliphake investigated the effect of ultrasonic waves. Despite all the unhappy situations, the basic studies of Loomis and Wood in America kept interest in ultrasonics alive among laboratory scientists in this country and to a greater degree in Germany, France, Austria, Switzerland, Italy, England and Japan.

Then, in 1938, a German engineer named Reimar Pohlman built an ultrasonic generator. Pohlman's first machine was a crude, but potent device. When he put his own fingers in the beam and kept them there too long, they became red and swollen and ached for hours afterward. "But if the dosage is less," he told the doctors, "I can expose my fingers every day without trouble."

He declared the beam could penetrate deep into living tissues and produce as much heat as desired in muscles, bones and joints. And, unlike widely used diathermy machines, it could be aimed to produce the effects precisely where they were wanted.

First reports on treatment by ultrasound from other countries were doubted in the United States. However, in 1949, the broadest and most significant trial of ultrasonics in medicine was undertaken by Dr. John H. Aldes, Orthopedic Surgeon, Los Angeles, California.

Dr. Aldes ordered his ultrasonic generator from Germany. When the crate was opened it contained the device, but not a word on how to operate it. "We didn't wait for directions," he said. "We found out how to run it ourselves."

The "finding-out process" required weeks of study on experimental animals, and trials on the hands, arms, legs and backs of the investigators themselves—trials that, at first often meant skin burns and hours of throbbing pain. "We need experts to give us a hand with the physics and the engineering part of ultrasonics," said Dr. Aldes turning for help to some of his friends at

*This paper has been developed from addresses delivered before the Iowa Association of Chiropodists, Des Moines, Iowa, June, 1956, and the Fellows Pedic Research Society Meeting, Chicago, Ill., October, 1956.

Metro-Goldwyn-Mayer Studios. Some of the animal research was supported in part by the Birtcher Foundation of Los Angeles.

In July, 1950, with proper dosages worked out, Dr. Aldes was ready to start on his first patient, a sixty-seven year old widow who had been crippled for many years with osteoarthritis, and who had to be carried to the hospital by her two daughters. After six weeks of treatment, she walked into the doctor's office. She walked slowly and stiffly, but she walked.

In October, 1951, Dr. Aldes made his first formal report before a meeting of the Western Orthopedic Association.

The most remarkable thing about medical ultrasonics is—that it could go through that amazing period of over-exaggeration and still survive.

What Is Ultrasonics?

Ultrasonic energy is ultrasound. What is sound? Sound is the mechanical vibration of all frequencies audible or inaudible to the human ear. Vibrations of sound waves beyond the range of the human ear are ultrasonic.

Some people can hear high tones with vibration rates as high as 15,000 per second; many people stop about 12,000 per second (which is like the highest notes on a violin). Some dogs can "hear" sounds with rates up to 20,000 per second. Dog whistles that are sold as "soundless," illustrate this point very well. Ultrasonic waves are generated at the very high rate of one million oscillations per second. It has been well demonstrated that this frequency is effective and it is a frequency that is not in the TV and radio range.

Sounds can be high or low; also, they can be "loud" and "soft." A slow rate of air wave vibration produces what we call a "low tone." A very fast rate of vibration produces a "high tone." A series of sound waves is energy moving. If you should strike a gong a heavy blow, the sound waves generated would be larger transmitting more energy, more "pressure" followed by more "suction." The effect on the ear would be great as the energy reaching the inner ear would be great, thus a "loud" sound.

Sound waves travel through different media at different speeds. In the air at sea level, its speed is about 1,100 feet per second; in water, its speed is greater—about 4,920 feet per second; in steel it really speeds up—about 19,700 feet per second.

Generation of Ultrasound

As before stated, in 1880 Pierre and Jacques Curie found that when quartz crystals were placed under a mechanical strain, their surface developed electrical charges. It was later found that the converse was also true . . . if electrical charges are applied to the surface of a crystal, mechanical vibrations will be generated. This is the "piezo-electric" effect.

When a properly cut quartz crystal is placed in an alternating electric circuit, mechanical vibration of the frequency of the alternating current in the circuit will be produced.

A properly prepared quartz crystal is mounted in a hand applicator. Through a special type cable, a high frequency current from a generator is conducted and applied to the quartz crystal. The crystal vibrates at the same rate as the high frequency current, one million per second in most therapeutic machines.

The quartz crystal is a waferlike disc. The crystal is mechanically mounted but not cemented. The crystal is air backed to assure energy transmission from the front surface only. Transformer oil is used in the crystal compartment as a cooling and electrical insulating medium.

The applicator containing the crystal (often called the "sound head" or "treatment head") is termed "transducer." The transducer receives electrical energy, and converts it to mechanical energy.

The construction is such that temperature rises in the transducer will not approach values likely to cause damage. The transducer is brass, heavily chrome plated in its entirety to discourage the corrosive action of oils, water and medications.

Quartz is used as a transducer because it is more efficient in the conversion of energy than other substances. Also, it can be cut and shaped so that the mechanical period of its vibration will match the frequency of the electrical current impressed upon it. Cutting and shaping of these quartz crystals is a difficult and painstaking job. The quartz itself is expensive and a large part of the cost of any good ultrasound unit is in the construction of the transducer applicator.

The modern ultrasound unit consists of a high frequency generator something like a short-wave diathermy. The high frequency current generated in the ultrasound unit does just one thing, it causes the crystal to oscillate at the fixed frequency, one-million vibrations per second. If the current from the generator is low, the crystal will emit low power—just as a gong emits a "soft tone" when struck lightly. But if the strength of the current is stepped up the crystal will vibrate vigorously but not more rapidly.

While the frequency of the crystal is usually fixed at one million we can control the sonic power it emits by controlling the current. The usual crystal has a surface area of 5 square centimeters. By controlling the current, ultrasonic energy of 1/10th watts per square centimeter of crystal to 3 watts per square centimeter can be emitted. This gives very fine control of the ultrasonic energy we wish to apply to our patients.

Dosage

Ultrasonic waves can be dangerous to patients if too much or too intense power is used. The question to be answered is "How much IS too much?" and "How intense is TOO intense?"

"How much is too much?" Up to 5 or 6 watts per square centimeter of crystal may be safe in the hands of an expert, but extreme caution is urged in large dosages. Dosage above 3 watts per square centimeter of crystal may be "too much." Time of treatment may vary from two to ten minutes.

With ultrasound, if perchance the operator is using a bit too much power, the patient will frequently tell you long before any damage can result. Three watts per square centimeter of crystal (5 square centimeters) is a safe maximum operating range.

"How much is too intense?" The patient should feel no discomfort or pain during the treatment. If there is a sense of burning, tingling or pain, the treatment is too intense, and the power should be reduced.

Intensity is the danger more than the time. Very high intensities may greatly affect the molecular structure of the tissues and cause damage or even necrosis. Weak stimuli excite living processes; while strong stimuli are destructive.

Biological Effects

Ultrasonic energy can depolymerize macromolecules, coagulate egg albumin, alter the dispersion and solubility of serum proteins, inactivate certain enzymes, such as pepsin and hyaluronidase, flatten out viruses and bacteriophages, mangle erythrocytes and leukocytes, destroy yeast cells, and punch holes in a good many bacteria.

The properties of the high energy sound field depend on its effect on cells, liquids and gases. Vibration of this sort is characterized by extremely high pressures. When a cell is suspended in an ultrasonic field the cell content becomes agitated, and there is considerable mechanical strain and tear on the cell membrane. It causes variable relative movement between cell components. Cell contents return to their original anatomical arrangement when the amount of energy is insufficient to cause permanent change. In liquids ultrasonic energy pro-

duces an effect called "cavitation." This is the formation of hollows when the liquid substrate is disrupted. It is a wave interference pattern similar to those seen around a ship's propeller. There is intense local agitation, high local temperatures, and electric potentials may be set up. The next step may be a lethal sterilizing effect because of strong dispersive power, degassing processes, thermal and oxidative effects, and coagulation. High absorption occurs in muscle as compared with fat and bone.

Ultrasound has three therapeutic effects on the chemicals of the body tissues:

1. A thermal effect; 2. mechanical effect; and 3. a chemical effect.

Thermal Effect

Heat is generated, the amount depending on the energy absorbed. A frictional heat occurs, due to the transition or reflection at the boundaries of the tissues of varying sound transmission, where the direction of the sound waves is altered and reflection occurs. The tissues are all of a different density, and consequently these waves will heat them in varying degrees. The important feature is that this heating effect cannot be duplicated by any other modality now employed.

Mechanical Effect

In mechanical effect the compression and rarefaction occurs at a high rate of intensity and the powerful micromassage to which cellular tissues are subjected produces a "whirling" or "stirring" effect which decreases the diffusion layer at the tissue surfaces; this in turn promotes the absorption and the diffusion of metabolites. This phenomenon may well explain a large part of the relief that is obtained in injuries such as sprains and fractured ribs.

An active increase in blood supply takes place. A local increase in the metabolic rate occurs.

There is a marked influence on all segments of the nervous system, e.g., relief of pain in arthritis, an example of the interruption of the pain cycle. Similarly relaxation of muscle spasm and vascular spasm occurs.

An analgesic effect is produced through the action on the nervous system (like long acting procaine, thermal and mechanical intereference with the conductivity of the nerve).

Chemical Effect

Chemical effects are degassing action and intensification of gas exchange through increased membrane permeability (alterations in diffusion and osmotic pressure systems). Liberation of oxygen takes place. Other chemical results are breaking up of tissue deposits and promotion of their absorption; acceleration of lymph flow; destruction of bacteria; increased solubility of proteins; and other changes in blood chemistry.

Application of Ultrasonic Energy

Ultrasonic waves will not travel through a vacuum and cannot be transmitted through air because the space between molecules is much greater than the amplitude of an ultrasonic wave. A coupling agent of heavy liquid petrolatum, liquid paraffin, vaseline or castor oil is used and is applied generously over the skin area to be radiated as well as over the source of the energy, which is the flat surface of the head of the transducer. Firm contact must be made between the flat surface of the transducer and the skin, eliminating air. Radiation is applied with a gliding or massage technique, using slow circular movements of the sound head. Make certain the patient is receiving the prescribed amount of ultrasonic energy. Failure to hold treatment head flatly against the skin, failure to use proper coupling media, failure to recognize deficiencies of the ultrasonic generator will often explain inability to obtain consistent results. Proper localization of the sonations is very important—mark the area.

An area of not more than four square inches per second is covered for one minute. This procedure is repeated until the entire surface to be treated has been reached. The head is never kept stationary, thus avoiding overexposure and localized pain, but complete contact is always preserved.

Gas-free water may be used as a "coupling" medium for ultrasound passes freely through water. A foot, leg, arm or hand can be immersed in water at a distance of one-half to one inch. The sound head can then be immersed and moved around near the surface of the member though not in actual contact. Energy from the treatment head will pass through the water into the part under treatment. There is some energy loss, but the method is workable.

Treatments are given for two to ten minutes, rarely longer. Recommended therapeutic programs include from eight to twelve, some ten to fifteen, treatments, daily or on alternate days, followed by a rest period of two or three weeks before a new series is started. If the symptoms persist, a second, and if necessary, a third and even a fourth series can be administered, after rest periods between each series.

Contra-Indications

Complications of ultrasonic therapy are extremely rare; when they occur it is usually the result of faulty technique.

Ultrasonic application should be avoided in—1. Pregnancy, 2. Cardiac region, 3. Brain tissue, 4. Malignant tumors, 5. Growing bones in children, 6. Reproductive organs, 7. the Eye, 8. Lower cervical sympathetic ganglia, 9. Tuberculous lesions, and 10. Fractures.

The best results from treatment by ultrasound are seen in the following conditions:

1. Arthritis, 2. Bursitis, 3. Trauma and post trauma, 4. Neuralgia, 5. Sciatica, 6. Occupational fatigue, 7. Degenerative joint disease, 8. Strains and sprains, 9. Low back conditions—prolapsed intervertebral discs, 10. Scars, 11. Post operative pain, 12. Stumps, 13. Neurofibroma, 14. Cellulitis, 15. Ulcers of peripheral vascular disease, and 16. Causalgia (breaking up pain cycle).

Conclusion

Ultrasonic radiation gives us a useful and effective physical therapeutic measure in pain without infection. It aids healing and reduces inflammation. If used properly, it is safe, effective, and offers a specific type of treatment not duplicated by other means of physical therapy. Ultrasound provides a means of rendering better and more effective service, gratifying to yourself and to your patient.

When one realizes that the spectrum is so broad as to include the wave lengths comparable to those emitted by radium, one realizes the vast research field that is still open.

601 Frances Building

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He who chooses the beginning of a road, chooses its destination.

Employment Counselor

CLINICALLY SPEAKING

A place for the more informal presentation of reminders, suggestions, notes, observations and technics of value in office practice. Your contributions of short manuscripts or illustrative case histories will determine this section's usefulness.

FREIBERG'S INFRACTION: ITS SEQUELAE AND TREATMENT WITH ULTRASOUND THERAPY

ALFRED I. ARNOLD, D.S.C.
Lakeland, Fla.

WHILE the occurrence of Freiberg's Infraction (juvenile deforming metatarsophalangeal osteochondritis) is relatively uncommon, it can be very interesting and gratifying to treat and effect a return to a painless, functional foot.

For illustrative purposes a brief review of this condition will be discussed. The cause of the infraction is trauma affecting bone and cartilage during a period of unusual growth. The important factors are trauma, circulatory disturbances and infection. The forcible impact of the ball of the foot against the ground, especially during athletic activities, will cause the distal ends of the second or third metatarsal bones to bear the brunt of the blows. Freiberg's infraction of the metatarsal head occurs most frequently in girls during adolescence.[1]

The writer has treated two cases of Freiberg's infraction during the past seven weeks with ultrasound and shall discuss each case separately. In both cases a rotating motion of the transducer head was used. The metatarsophalangeal articulation being an irregular area, the underwater technique was employed.

Case 1. Patient C. R., female age 21, reported to this office for pain and stiffness around the second and third metatarsal head area of the right foot. Palpation at the area elicited exquisite pain which was also apparent on weight-bearing. A slight inflammatory process was present. Duration of pain was approximately three weeks. During this time the patient self-administered magnesium sulphate soaks with no relief. Gross examination revealed a hard, nodular enlargement over the third metatarsal head. A considerable amount of rigidity and spasticity was present over the entire third toe and forefoot.

On taking a history, the patient stated that she was very athletic during her teens. She recalled that when she was fifteen she hurt her right foot while playing basketball but felt it was not quite bad enough to require medical aid; although pain did persist for two or three weeks after.

One week prior to reporting to this office, the patient had consulted her family physician for her painful right foot. He immediately referred her to this office. Roentgenographic examination revealed the following pathology.

1. Flattening of the third metatarsal head.
2. Broadening of the neck and distal portion of the shaft.
3. Irregularity of the epiphyseal line.
4. Widening of the third metatarsophalangeal joint space.
5. Sequestrum or loose bodies in the area.

Treatment

Ultrasound therapy was started at 3 watts for 4 minutes and given every other day for three weeks over the affected area. In conjunction with the ultrasound, microtherm and hydrotherapy were administered, along with a bi-plane 3/16" felt balance pad to relieve weight-bearing from the third metatarsophalangeal joint. At the end of the first week of treatment pain had greatly diminished. By the end of the second week the spasticity had relaxed considerably. By the third week the patient had no pain and the foot was functional.

To prevent a recurrence of the disability, periodic and regular ultrasound and physiotherapy treatment was recommended along with balance appliances.

Case 2. Patient S. B., female, age 40. The subjective and objective symptoms and case history were remarkably similar to Case 1. However since this patient had postponed treatment and neglected the care of her infraction over a greater length of time, there was a considerable ankylosis of the third M-P joint. Pain was extreme and flexion-extension of the third toe was practically nil.

Ultrasound, under-water technique, was initiated every other day. Treatment was started at 4 watts for 4 minutes. At the end of two weeks of treatment there was little or no pain and flexibility was greatly improved. In conjunction with the ultrasound and balance padding, Simagen (Schering) was prescribed: ii tabs p.c. & h.s. This patient also was advised to have periodic treatments to maintain comfort.

Follow up roentgenograms on both cases revealed a disappearance of considerable loose calcium bodies, and a more distinct delineation of the connected bones. Pain in both cases is now non-existent and function is greatly restored.

Summary

1. A brief general discussion of Freiberg's infraction is presented.

2. The case histories of two patients having had Freiberg's infraction are briefly presented.

Conclusion

Ultrasonic energy as a therapeutic agent adds a new modality to present physical equipment in the treatment of joint pathologies, bursitis and chronic arthritic conditions. The fact that two isolated cases of Freiberg's infraction were successfully treated with ultrasound, is not conclusive, but the end results were so excellent as to warrant an optimistic outlook for further investigation.

927 South Florida Ave.

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A TWO-YEAR EVALUATION OF THE USE OF ULTRASOUND THERAPY IN CHIROPODY

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Philadelphia, Pa.

Two years is not sufficient time to evaluate any new therapy. However, since there is such an obvious lack of reports concerning the use of ultrasonic therapy in chiropodial conditions, I thought it of benefit to present my results with two hundred and twenty-six chiropodial cases that have been treated with ultrasound.

In preface to the chart that follows there are certain pertinent facts that should be noted:

1. Whenever possible, the direct contact method of application was utilized.

2. In every case the contact medium used was a cream containing 5 mg. of hydrocortisone alcohol in a hydrophylic buffered base having a pH of 4.6 (Cort-Dome Creme ½%, Dome Chemicals, Inc.).

3. The basic rationale for the use of ultrasound in the cases presented is, in theory, the reestablishment of normal vascularity and the sedation of nerves by the production of deep heat by the micro-mechanical-thermal reaction of ultrasonic energy in human tissues. The cortisone cream was used because of the anti-inflammatory properties of this hormone derivative, plus the air-excluding property of its base.

4. The ultrasonic transducer head applicator was always kept in circular motion during the treatment time.

Summary

Two hundred and twenty-six chiropodial

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TABLE I

Condition	No. of Cases	Dosage & Tmt. Time (variable)	Interval & Duration of Tmts.	Results* E	G	F	Pr	Po
HELOMA DURUM (with underlying bursitis)	14	2.0 watts/cm² 5 minutes	Three times weekly Three weeks	2	8	1	2	1
HELOMA NEUROVASCULARE	21	2.0 watts/cm² 5 minutes	Three times weekly Two weeks	9	6	3	1	2
VERRUCA PLANTARIS (resistant)	6	1.5-1.8 watts/cm² 5 minutes	Twice weekly Three weeks	3	2	1		
MOSAIC VERRUCA	2	2.0 watts/cm² 5 minutes	Twice weekly Five weeks	2				
INTERMETATARSAL BURSITIS	18	1.5 watts/cm² 5 minutes	Three times weekly One week	8	6	4		
TRAUMATIC PERIOSTITIS	16	2.0 watts/cm² 5 minutes	Three times weekly One week	8	7			1
ANKLE SPRAIN	19	2.0 watts/cm² 5 minutes	Three times weekly One week	16	3			
METATARSAL FRACTURE (fresh)	2	2.0 watts/cm² 5 minutes	One treatment prior to splinting	2				
MORTON'S NEURALGIA (chronic)	3	2.0 watts/cm² 5 minutes	Three times weekly Three weeks		3			
VARICOSE ULCER	4	1.2 watts/cm² 5 minutes	Once weekly Five weeks		4			
DIABETIC-ASO ULCER	7	1.0 watts/cm² 5 minutes	Once weekly Six weeks	4	3			
T.A.O. ULCER	2	1.0 watts/cm² 5 minutes	Once weekly Four weeks		1	1		
A.S.O. ULCER	8	1.0 watts/cm² 5 minutes	Once weekly Five weeks	1	4	3		
PERONEAL SPASM	3	2.5 watts/cm² 8 minutes	Three times weekly One week		3			
TENOSYNOVITIS	1	1.0 watts/cm² 5 minutes	Three times weekly One week	1				
MUSCULAR FATIGUE (acute)	4	2.0 watts/cm² 5 minutes	Twice weekly One week	4				
CALCANEAL BURSITIS	11	2.5 watts/cm² 5 minutes	Three times weekly One week	10	1			
HALLUX LIMITUS	5	1.5 watts/cm² 8 minutes	Three times weekly Three-Four weeks	3	2			
PLANTAR FASCIITIS (5 acute; 12 chronic)	17	2.0 watts/cm² 5 minutes	Twice weekly Two weeks		16	1		
NEURITIS (assoc. with fibrous Heloma Molle)	9	1.5 watts/cm² 5 minutes	Three times weekly One week		6	2		1
TINEA PEDIS	28	2.0 watts/cm² 10 minutes	Three times weekly Two weeks		8	10	2	8
TRAUMATIC TENDONITIS	3	1.5 watts/cm² 5 minutes	Three times weekly One week	3				
SPASTIC CONTRACTION OF TOES	4	2.0 watts/cm² 5 minutes	Three times weekly Three weeks		2	2		
OLD PLANTAR FIBROID SCARS	6	2.5-3.0 watts/cm² 5 minutes	Three times weekly Four-Five weeks	5	1			
PAINFUL POSTOPERATIVE HALLUX VALGUS SCARS	3	2.0 watts/cm² 5 minutes	Three times weekly Three weeks	2	1			
HELOMA NEUROFIBROSUM	11	2.0 watts/cm² 5 minutes	Three times weekly Four weeks		8	2	1	

*RESULTS: The basis of the results observed are, in the main, symptomatic in nature. The results, therefore, are to be judged accordingly. Where the restoration of function of the part being treated returned to normal, the designation "E" was used signifying excellent. The medium of the scale follows accordingly: "G" signifies good; "F" signifies fair; "Pr" signifies promising; and "Po" signifies poor.

It is to be noted that in the ulcer cases a plain sterile gauze dressing was applied after each treatment. In the heloma cases, the excrescences were always pared down prior to ultrasonic treatment.

cases and their results have been presented for evaluation. These cases cover twenty-six varied chiropodial conditions.

Dosage and treatment time is a variable depending upon patient tolerance and the specific ultrasonic unit being used. (The average treatment time and dosages have been recorded in this report.) Basic ultrasonic rationale is still only theoretical until proven further.

Ultrasonic therapy has found a steadfast position in my practice, not because I could not have attained the same results with other treatments and modalities, but mainly because the results with ultrasound therapy have been brought about much more readily. I have found thus far that the results are longer-lasting and of a more gratifying nature.

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CHIROPODY'S AID TO ATHLETICS

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It is the civic duty of the chiropodist to aid the high schools and colleges of his community in participating in competitive sports. More than fifty per cent of all injuries to ball players and track participants can be treated by a chiropodist.

Some of the more numerous injuries are: sprained ankles, avulsion fractures, fractures of the metatarsals, march fractures, sesamoids and phalanges. Weak foot conditions take a heavy toll unless properly treated. Soft tissue injuries are many and are easily treated if you are available.

Experience in treating these injuries has shown that hot packs, infra-red lamp and many of the commoner remedies require re-evaluation. Soft tissue injuries are better treated by contour pressure bandages, diathermy, and ultrasonic therapy. A chiropodist in San Angelo, Texas, stated that his junior college went through a whole season and a California Bowl game without a disabling soft tissue injury. He credits on the field treatment of injuries with pressure bandages for this.

More chiropodists should make their services available to their local athletes. These young men will be enthusiastic about your services. It is not only not a thankless job, but produces much personal satisfaction.

Mr. A. B. Morris, Athletic Director, Abilene Christian College, states that, "In my past thirty-two years of coaching experience here at Abilene Christian College I have found a large per cent of injuries are located in the lower extremities.

"For the past several years we have been fortunate in securing the services of an outstanding chiropodist to whom we have sent a large number of these injuries. The results were extremely gratifying. In fact, some of these boys were almost beyond the point of being able to participate. But by proper correction they were able to continue and have made outstanding records in their activities."

Mr. Ray Vaughn, Athletic Director, Capitol Hill High School, Oklahoma City, states that, "The coaching staff of Capitol Hill High School has learned through years of experience that it can always count on chiropodists and their treatment of athletic injuries.

"We refer the greater per cent of our injuries to the lower extremities to them and have found the end results to be expert diagnosis and treatment, quick return to participation."

Making his services available to the local athletic teams provides the chiropodist with an excellent opportunity (and gratifying experience) to render a worthwhile community service.

1700 Exchange Bldg.

JOURNAL

OF THE

NATIONAL ASSOCIATION of CHIROPODISTS

PUBLISHED UNDER THE DIRECTION OF THE EXECUTIVE COUNCIL BY THE
NATIONAL ASSOCIATION OF CHIROPODISTS

3301 SIXTEENTH STREET, N.W., WASHINGTON 10, D. C.

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PRESIDENT'S MESSAGE

Committee Recognition

EACH YEAR at the National Convention, the Delegates, State Presidents, and Secretaries receive a report book in which each N. A. C. Committee Chairman enumerates the activities of his committee for the year. It has long been a concern of mine that the general membership of the N. A. C. seldom has an opportunity to read these reports and consequently has little idea of the work performed in its behalf by its colleagues.

The committee chairman is a faithful "dollar a year man" who unselfishly gives hours of time and talent to the profession for the sheer satisfaction of contributing to the progress of the profession. All committee members work for the same goal. Many of the important programs are developed by this staff of volunteer experts.

The question has been asked, why do we need so many committees? If we could afford a paid staff at our national headquarters large enough and with sufficient diversified talents, we might be able to reduce our committee structure. At present our paid staff is limited and it is impossible for it to expand all of the varied facets of our professional development. No matter how large a headquarters staff we might have, centralized operation can never supplant the stimulating enthusiasm, special ability, and morale-building effect of our own members' participation in the work of the profession.

A total of thirty-five areas of activity are sponsored by N. A. C. committees. These activities are grouped into seven councils which are supervised by members of the Executive Council. This organized system for administration is proving to be an effective means of accomplishment when adequately linked with our headquarters operation.

A complete directory of our councils and committees and their chairmen is listed in every JOURNAL. When the corresponding state society committees need information they should utilize the directory and consult with their counterpart. Here is a brief list of the major committee projects in progress:

Research: supervision of grant-in-aid programs. Technical Developments: planning and solicitation of exhibits for Hall of Science. Foot Surgery: strength-

ening P-G surgery at college level. Roentgenology: P-G courses through A. S. C. R. Foot Orthopedics: advancement through A. C. F. O. Hospital Chiropody: pursuit of privileges. Pharmaceutical: monthly JOURNAL column. Shoes: evaluation of chiropody's interest in shoes. Children's Foot Health: school examination form; monthly JOURNAL column.

Publications: book reviews and abstracts from state publications. Nomenclature: inclusion of chiropody nomenclature in "Standard Nomenclature of Diseases and Operations." History & Library: research and articles on chiropodical history.

Medical Relations: emphasis on educational pamphlets, inter-professional conferences. Industrial Relations: a comprehensive program of developing complete curricula for undergraduate and P-G instruction.

Public Education: revision and production of brochures and pamphlets. Public Relations: cooperation with headquarters, liaison with A.F.H.F. National Health Program: affiliation with State Health Councils. Speakers' Bureau: compilation of available speakers. Audio-visual: completion of dramatic new exhibition displays.

Federal Affairs: surveillance of all governmental agencies in regard to inclusion of chiropody wherever possible. State Legislative Affairs: compilation of an up-to-date chart of legislative acts, including an analysis. Military Affairs: stimulate interest in more chiropody billets.

State Society Membership: compilation of up-to-date non-member lists—a comprehensive membership campaign. Vocational Guidance: 1. Kit to 3,000 Vocational Guidance counselors on the college level. 2. A kit for each state society. 3. Reprinting of Stepping Up To A Career. 4. Booth at National Convention of Vocational Guidance Counselors. Students Organization: active divisions in all colleges. Ethics: review of all telephone directory listings in the U. S.

Professional Economics: analysis of pilot study economic survey. Museum: additional material. Insurance: catastrophic hospital expense insurance. Constitution and By-Laws: preparation of amendments. Committee on Scientific Program: an outstanding array of scientific features for the National Convention with every paper followed by a discussor.

Every committee member deserves the appreciation and thanks of the entire Association, and I trust that I may meet and extend my personal thanks to every committee member at the National Convention.

FELTON O. GAMBLE, D.S.C.
President

HOUSE OF DELEGATES REPORT BOOK

RESOLUTIONS, reports, etc., for publication in the annual Report Book of the N.A.C. House of Delegates must be at National headquarters office by June 18th to insure inclusion in the 1957 volume.

Congress Considers Commissions on the Aging

CONGRESS is manifesting considerable concern over conditions incident to the aging. Thus far there are eight bills and three resolutions before the House and two bills before the Senate relating to this subject. Most of these bills would create a Bureau of Older Persons within the Department of Health, Education and Welfare, others recommend the creation of a Commission on the Aging. Some would authorize making Federal grants to the states to assist in the development and operation of studies and projects to help older persons.

The staff of the Senate Committee on Labor and Public Welfare last year compiled an extensive series of studies of the aged and aging which it has just released. The studies relate to the health facilities and insurance available to the older people, hospital care, mental health and chronic illness. Several Congressmen have inserted in the appendix to the Congressional Record able discussions of the problem: namely, Hon. Isidore Dollinger, Hon. Victor Anfuso of New York and Hon. James E. Van Zandt of Pennsylvania. Hon. John Dingell of Michigan is sponsoring a bill that would obligate the Federal Government to provide free hospital service for all over 65 years of age.

On April 12, 1956, the President requested twelve departments and agencies to designate representatives to a Federal Council on Aging. On May 23rd this Council released a set of by-laws with the following goals: (1) To help make it possible for older persons who desire and are able to work to continue their productive lives through suitable, gainful employment. (2) To help lessen anxiety about economic insecurity. (3) To stimulate the construction of housing and the provision of living arrangements for the older people.

H.E.W. Budget

House of Representatives is busily engaged in determining the budget for the fiscal year 1957-58 and the Department of Health, Education and Welfare is much concerned as to how it may fare.

The Budget Committee, which prepares for the Congressional Committee estimates of what will be necessary to finance the program the Department plans, submitted a budget of $2,981,277,381, but the Congressional Appropriations Committee, responding to the economy wave, cut out almost $119 million, recommending $2,862,502,-881, which is almost $19 million less than the budget it is operating under this year. At present the committee's report and recommendations are being considered by the House, in session, item for item, and further reductions are being made. After the House has finished, the bill as then constituted will be sent to the Senate for study and action. It may make further cuts and it may also restore some of the reductions made by the House. Final action will have to be available before July 1st but it is altogether possible that the bill will be ready for the President some time in May.

In interpreting budget figures, it must be understood that Congress through one set of committees will authorize the development of plans and programs, but another committee, the Appropriations Committee, must authorize the expenditures of such monies as may be necessary for implementing the program, thus proposed activities may not be undertaken until the Appropriations Committee has taken action. Then, too, some programs may extend over more than one year with their annual allotment stated and in making up a new budget, these continued obligations must be remembered. For instance, approximately two billion dollars of this H.E.W.

budget is already pledged and less than one billion, or 9 percent, is new money. Out of this 9 per cent, 7½ percent is for public health activities.

Since writing the above, it is reported that the House passed by voice vote, and sent to the Senate, a $2,846,831,581 appropriation for the Labor and H.E.W. Departments after approving cuts of $134,446,000 in the President's budget request.

National Library of Medicine

The 84th Congress created the National Library of Medicine within the Public Health Service and transferred to it the Armed Forces Medical Library. For its administration, Congress authorized a Board of Regents of seventeen members of which Dr. Worth B. Daniels, Clinical Professor of Medicine, Georgetown University, has been elected chairman and Dr. Champ Lyons, Professor of Surgery, University of Alabama Medical College, was elected Vice Chairman. Lt. Colonel Frank B. Rogers, Director of the National Library of Medicine, was named Secretary of the Board.

One of the first duties of the Board will be to select a site for the proposed new Library building.

Otherwise

Secretary Marion B. Folsom of Health, Education and Welfare, recently announced the President's nomination of Katherine Brownell Oettinger as Chief of the Children's Bureau.

Dr. Oettinger has demonstrated outstanding qualities of leadership in the field of child health and child and family welfare, Secretary Folsom announces.

Dr. Claire F. Ryder, for the past four years full time Lecturer on Gerontology at the Harvard University School of Public Health, has joined the staff of the Public Health Service's Chronic Disease Program in the U. S. Department of Health, Education and Welfare.

Dr. Ryder will coordinate and direct training activities in the fields of chronic disease and in the health of the aged. These programs will be conducted in cooperation with state and local health departments, medical and paramedical schools and professional societies.

Dr. Ryder is a graduate of Radcliffe College and received her Medical Degree at Tufts College and her Master's Degree in Public Health at the Harvard School of Public Health.

Surgeon General Leroy E. Burney has created a committee of physicians to advise him on Public Health Service activities which are related to the practice of medicine.

The first meeting of the Advisory Committee will be held on April 4 and 5 in Washington, D. C.

Dr. Burney said, "We have many groups who advise us on research and disease control programs. With the growth of medical and related research, it is increasingly important that we work with private physicians as well as with health agencies, to help apply the new knowledge promptly and effectively. Our new Advisory Committee will be of great aid both in this effort, and in advising on those activities of the Public Health Service which bear directly or indirectly on the practice of medicine."

Medical School Inquiry

The House Committee on Interstate and Foreign Commerce has had a study made by members of its staff of the schools of medicine, dentistry, osteopathy and public health for the purpose of ascertaining their economic needs.

We have had an opportunity to study the staff report and prepare a comparable statement on the schools of chiropody which we shall bring to the committee's attention. The study is to be used as a basis for determining Federal grants for teaching and equipment facilities.

PROPOSED AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

THE FOLLOWING propositions were referred to the Constitution and By-Laws for the framing and appropriate amendments:

Proposition A.

Resolution No. 30 (re: change in annual assessment) amend Constitution as follows:

Article VII, Section 2, line 2, delete the word "twenty" and in lieu thereof substitute the words "twenty-five."

Proposition B.

Resolution No. 53 (re: Constitution and By-Laws Committee)

Note: Refer to pages 40 and 41, N.A.C. JOURNAL, December 1955, Chapter VII, Section 2, reads: "there shall be eight Councils." Under Section 4, only seven Councils are listed. The following should be inserted. (Page 43, Journal, December 1955)

Council No. 8
Internal Affairs
Subsidiary and affiliated organizations
Professional Economics
Museum
(add) Constitution and By-Laws Committee

Amend Chapter VII by addition of new section:

Section 10. Constitution and By-Laws Committee. The House of Delegates shall elect three members; one for 1 year, one for 2 years, and one for 3 years, and upon the expiration of their terms thereafter, one for 3 years. In the event of a vacancy occurring before the expiration of a term for which a member was elected, the President shall appoint a member to fill such vacancy until the next House of Delegates meeting at which time they shall elect a member for the balance of the unexpired term.

The Chairman of this committee shall be designated by the President. It shall be the duty of this committee to prepare suitable amendments upon recommendation of the House of Delegates and report either with or without recommendation all resolutions or amendments submitted by the several states for changes in the Constitution and By-Laws; and shall further submit to the House of Delegates any other changes it may deem necessary.

Proposition C.

Resolution No. 78 (re: change in name of Association). Change Article I of the Constitution as follows by adding:

"Section 1. Name of Association. This organization shall be known as the AMERICAN CHIROPODY ASSOCIATION."

"Designate 'Purpose of this Association' as Section 2."

In all the following sections, amend Constitution by striking out the words "National Association" or "National Association of Chiropodists" and in lieu

thereof substitute the words "American Chiropody Association." Article III, Sec. 3; Article VI, Sec. 1; Article VII, Sec. 2; Article X.

Amend the By-Laws by striking out the words "National Association" or "National Association of Chiropodists" and in lieu thereof substitute the words "American Chiropody Association" in the following chapters and sections: Chapter I, Sec. 3, Sec. 5, Sec. 5a, Sec. 5b; Chapter III, Sec. 1a, Sec. 7; Chapter VI, Sec. 4, 1, a, Sec. 4, 1, c, Sec. 4, 1, d, Sec. 4, 1, e, Sec. 4, 2, a, Sec. 4, 2, b, Sec. 4, 2, c, Sec. 4, 2, e, Sec. 4, 2, f, Sec. 4, 2, g; Chapter VII, Sec. 9a.

Submitted by
Constitution and By-Laws Committee
J. V. BEHAR, D.S.C., Chairman
C. E. KRAUSZ, D.S.C.
S. E. REED, D.S.C.

Proposition D.

Amend the Constitution as follows:

Strike out the words (Podiatry), (Podiatrists) wherever they appear in the following: Article I, Article II.

Amend the By-Laws as follows:

Strike out the words (Podiatry), (Podiatrists) in Chapter I, Sec. 1 (a).

Submitted by
Constitution and By-Laws Committee
J. V. BEHAR, D.S.C., Chairman
C. E. KRAUSZ, D.S.C.
S. E. REED, D.S.C.

Proposition E.

Amend Article V, Executive Council, as follows:

After the words "Past President," delete the following: "and six members at large shall be elected by the House of Delegates; two of these members shall serve for a term of one year, two for two years, and two for a term of three years. At the expiration of each such term, a successor shall be elected for a term of three years" and in lieu thereof substitute the following: *"and one member to be selected by each Zone or Region as constituted by the House of Delegates for a term of three years and all his travel and other necessary expenses shall be defrayed by his respective zone or region."*

Submitted by Board of Trustees of the
New Jersey Chiropodists Society
J. P. Horwitz, D.S.C., Secretary

Proposition F.

To Amend the Constitution and By-Laws:

Resolved, that the National Association of Chiropodists raise their dues from $20.00 to $30.00 annually, beginning with the next fiscal year June 1, 1957.

Submitted by
Arizona Chiropody Association
I. D. SHAPIRO, D.S.C., Secretary-Treasurer

Proposition G.

To Amend the Constitution and By-Laws:

Resolved, that N.A.C. dues be raised, not more than $20.00 per year.

Submitted by
District of Columbia Podiatry Society
M. L. SELBY, D.S.C., Secretary

Proposition H.

To Amend the By-Laws:

Chapter VII, Sec. 4 (a). Under Council 2, delete "Technical Developments" and substitute "Scientific Exhibits." Amend Organization Chart correspondingly.

Submitted by
A. RUBIN, D.S.C., Secretary

PROPOSED AMENDMENTS TO THE CODE OF ETHICS

Proposition A.

Amend the Code of Ethics Titles as follows:

Strike out the words "National Association of Chiropodists" and in lieu thereof substitute the words "American Chiropody Association."

Proposition B.

Amend the Code of ethics in the following places by striking out the word or words (Podiatry), (Podiatrist), (Podiatrists) wherever they appear in the following sections: 1, 2, 3, 4, 5, 8, 9, 13, 14a, 14d, 14e, 14f, 14g, 15, 17, 18.

Section 14 (a) strike out "effective June 1, 1950."

Submitted by
Constitution and By-Laws Committee
J. V. BEHAR, D.S.C., Chairman
C. E. KRAUSZ, D.S.C.
S. E. REED, D.S.C.

YOU ARE DELINQUENT AFTER JUNE 1

ACCORDING to the By-Laws of the Association, a member is in arrears after June 1, 1957, for the year 1957-58, and may be dropped from the rolls for delinquency. Past practice has been to allow a grace period to December 1st. The 1956 House of Delegates by Resolution No. 50 instructed the Secretary to compile a delinquency list on September 1st of each year with automatic loss of privileges of membership (which includes a subscription to the Journal) and to notify the N.A.C. Insurance Administrator so that insurance policies of delinquents would be cancelled.

Individual members will please note and remit their dues to their state secretary. State secretaries will please forward the National assessment as expeditiously as possible.

SURGERY IS THE ANSWER

N.A.C. COMMITTEE ON FOOT SURGERY

DOCTOR, "Isn't there some way that I can get rid of this extremely painful corn?" This question is asked daily in countless chiropody offices throughout the country and in fact throughout the world for that matter.

In the entire world, the practice of chiropody enjoys its highest plane, and here in the new world particularly, in the United States. Chiropodists from abroad have come to this country to obtain the knowledge of foot problems that is lacking in their own country.

Our educational requirements are the highest in the world, our schools are wonderfully improved and are constantly seeking further improvements in teaching facilities. We have symposiums, post graduate work and special lectures on newer developments constantly in progress; and yet one of the basic considerations in the practice of chiropody, the common corn, has been sadly overlooked. There is nothing wrong with serious consideration of orthopedics, electro-therapy, hydrotherapy, x-ray and balance considerations, but we are shunning our birthright when we neglect the common corn.

For generations we have been devising new methods of padding, moleskin, felt, latex and other materials. Medications have varied from the analgesics to injection therapy. All of these procedures have dealt with one factor—relief. What about cure?

It is true that many corns have been eliminated by the above measures, but what about the thousands of cases that did not respond?

Any profession to justify its existence must engage in research if it is to survive. Chiropody in the field of foot surgery has attempted to meet this challenge.

In 1942 the American College of Foot Surgeons was born because we needed an evaluating agency in foot surgery. Prior to that time it was not uncommon for some lecturer on a scientifical program to either demonstrate or lecture on some phase of surgery. The technique and procedure might have been premised on a case or two, it might be basically unsound and yet those listening left with the impression that because this lecturer said it was so—it must have been a satisfactory procedure. Those who watched felt that they could go back to their offices and duplicate the demonstration without further experience or training.

Since the A. C. F. S. has been an affiliated body of the N. A. C. the picture has changed. All surgical procedures to be approved must meet the rigid standards set forth in the constitution and by-laws. Results are based on 50 or more cases and no technique is approved before it is thoroughly tested and clinical results support the claims made.

The A. C. F. S. has conducted its own research, and through this research we are able to say that corns are correctable through surgery. In fact, we go a step further and say that we can not only eliminate the heloma durum or heloma molle, but it is virtually impossible for the heloma durum or heloma molle to return on the same site, except through accident or faulty technique.

How did this happen? It is the result of trial and error on the part of men doing surgery throughout the years who are now fellows of the American College of Foot Surgeons.

Are you interested in this fact that it is now possible to eliminate the common corn? If you're not, you should be.

Of all the conditions the chiropodist

treats, the corn is the most frequent. As to the incidence of corns, let me give you some statistics.

A survey of foot problems was made at the Du Pont Company in Wilmington, Delaware in 1945-46. A cross section of a survey of 503 cases was evaluated.

These people were divided into three categories.

1. Those with condition and complaint –225.

2. Those with condition no complaint –222.

3. Those with neither condition nor complaint–56.

The various conditions found and their frequency in both men and women were tabulated.

Heloma durum, female	98	
Heloma durum, male	83	
Heloma molle, female	43	
Heloma molle, male	26	
	250	
Tyloma, male	75	
Tyloma, female	94	
	304	Males
	199	Females

This was a very representative group of American people whose examination charts showed that over 80% had corns.

If more than one out of two Americans has corns, it is extremely important that some measures be taken to change this picture. When we realize that millions of dollars are spent yearly for corn cures and nostrums to relieve the painful corn, chiropody faces a real challenge.

To the men and women who are doing foot surgery all of this is old hat. It is to the large majority of our profession who do not do surgery that I address these remarks.

If there is any one condition that is truly within the chiropodists' province it is the corn–hard or soft. It is our hope that within a two-year period we can have qualified chiropodists in foot surgery in every major city in the country who can give the general public this service that it has every right to expect from a growing progressive profession.

How can this be done you ask–well our schools are now in the process of setting up rotating post graduate courses in foot surgery aided and assisted by the American College of Foot Surgeons. If you want to be one of those who can eliminate the corn instead of merely giving relief, contact your nearest accredited chiropody school for information on when and where you can get the training that will equip you to do foot surgery.

In closing, I would like to quote our N. A. C. Historian, Dr. Charles E. Krausz in his summation of our profession, "Chiropody with all of its faults and problems is still the hope of a footsore world."

LESTER A. WALSH, D.S.C., F.A.C.F.S.
Chairman, Committee on Foot Surgery
Midland, Texas

Training means learning the rules. Experience means learning the exceptions.

Indianapolis Times

THE PODOPEDIATRIC CLINIC

JOHN T. SHARP, D.S.C.
Chairman, Committee on Children's Foot Health

This section is devoted to a discussion of the problems peculiar to the child's foot. A separate subject will be considered each month, on a question and answer basis. Members are invited to send in their questions relative to the various phases of podopediatrics. Questions will be answered in accordance with the heading under which they fall.

NORMAL STANDARDS

What is meant by "Normal Standards?"

THESE ARE ACTUALLY criteria by which normal growth and development are measured.

Why are Normal Standards important?

They are important because one cannot recognize the abnormal unless he understands the normal prototype from which the aberration is made.

Which of the Normal Standards are of importance to the chiropodist?

Since many of the diseases which affect normal function in the feet and extremities are disorders which primarily alter normal growth and development, the chiropodist should concern himself with a number of the standards by which these entities are measured. It should be mentioned at this point that the term *growth* applies to the change in size and appearance of an individual which is brought about by the gradual accretion of cellular material. Its standards are measured in terms of weight and inches. *Development* on the other hand refers to the child's abilities to perform certain functions. This is essentially dependent upon neuro-muscular normalcy, and is measured in terms of the individual's capability of executing certain basic functions (such as crawling, standing, walking, speaking, etc.) by the time certain chronological age ranges have been reached. In addition to the normal standards which apply to growth and development of the child, the chiropodist must also concern himself with another group of standards: those which apply to *posture*. To summarize: we are fundamentally concerned with the normal standards of growth, development, and posture.

What are some of the standards by which normal growth is measured?

These are chiefly standards of weight and length (or height) at certain ages. The average birth weight is about 7 to 7.5 lbs. (Watson-Lowery). A closer analysis of birth weight reveals that white males average between 7 and 8 pounds, white females between 7 and 7.5 pounds, negro males between 6.8 and 7.3 pounds, and negro females between 6.4 and 7.1 pounds. During the first few days of postnatal life there is usually a slight loss of weight. This loss averages about 5 to 8 percent of the birth weight. The loss is regained by about the tenth day of postnatal life. Birth weight is usually tripled by the end of the first year of life and quadrupled by the end of the second year. Between the ages of two and ten years, the gain in weight is relatively slow, the average increase being 4 to 6 pounds per year. During the adolescent period there is a characteristic "spurt" in weight gain. In girls this occurs usually between the ages of ten and twelve, while in boys it is observed between twelve and fourteen years of age. After the fifteenth year in girls and the seventeenth year in boys there is very little change in body weight.

The average length of a normal child at birth is about 20 inches. Length is the pronograde equivalent of height. This measure-

ment is doubled by the fourth year and tripled by the thirteenth year. There is usually a marked acceleration in statural growth during adolescence. In girls this is seen between the ages of ten and twelve, and in boys between twelve and fourteen. Growth in height continues in girls until the eighteenth year and in boys until the twentieth year. The marked increase in weight and height during the adolescent period is undoubtedly a contributing factor to the considerable postural foot problems encountered in this particular age group.

What are the normal standards relative to posture in children?

An individual's posture is influenced by many factors. Among these are: age, body type, general health and strength, and environmental elements, notably gravitational stress. Because of these many factors, normal posture varies at different ages. In the newborn, the chief postural characteristic is generalized flexion, this attitude being a residuum of the intrauterine position. During the pronograde period of the prewalking child, gravity has an "unwinding" effect on posture. Consequently the flexion attitude is of relatively short duration. When the infant begins to raise his head, the cervical portion of the spinal column become slightly convex anteriorly. As strength and development progresses and the child begins to stand and walk, a lumbar lordosis becomes apparent. Posture in the child of this age group is characterized by a fairly straight neck and upper back, a lordotic lumbar area, a prominent abdomen, mild bowing of the legs, mild external rotation of the lower extremities, and pronation of the feet. The erect, straight shouldered, big-chested, flat abdomened form of posture is essentially observed only in late adolescent and early adult age groups. Unfortunately, as we increase in age we seem to revert back to the less esthetic postural forms of early childhood. The bowing of the legs mentioned previously as a characteristic of the first walking child usually is overcome by about the eighteenth month. At this point many children develop a mild knock knee, which often persists until about the fifth year of age. Because of pelvic structure, girls are more prone to knock knee than are boys.

In children of grade school age, posture may be considered as satisfactory if (when the child stands with his feet together, arms hanging loosely at sides, eyes straight ahead) a line starting immediately in front of the ear passes through the shoulder, greater trochanter of the femur, and anterior part of the longitudinal arch of the foot.

What are some of the standards of normal development in children?

In discussing development in children, we are going to confine ourselves to motor development, and more specifically to motor development as applied to the lower extremities and the locomotor apparatus. In general we may say that development in the child proceeds in a cephalocaudal fashion. This means that eye control is gained first, and is followed in turn by control of the head, arms, trunk and lower extremities. A chronological "calendar" for motor development in the normal child is as follows:

1. He can hold his head erect and turn it from side to side by the fourth month.
2. He can roll over by the fifth month.
3. Unsupported sitting is possible by the seventh month.
4. He can stand upright with help by eight months.
5. He creeps by ten months.
6. He walks when held by the hand at eleven months.
7. He climbs stairs by thirteen months.
8. He stands well alone by the fourteenth month and walks well alone by the fifteenth month.

TECHNIQUES IN FOOT SURGERY

L. R. McCAIN, D.S.C., F.A.C.F.S., and N. H. KETAI, D.S.C., F.A.C.F.S.
Editors, Publications Committee, A.C.F.S.

Illustrated case reports and discussions, suggesting approaches to chiropodical surgery, from the files of the American College of Foot Surgeons.

A SURGICAL PROCEDURE FOR ONYCHOCRYPTOSIS

A white woman, aged 38, seen in the hospital presented marked incurvation of the nail of the great toe right foot on its medial aspect.

The medial nail groove continued to produce discomfort despite repeated palliative reduction.

Examination revealed a preoperative blood pressure of 130/80, and an oral temperature of 98.6°. Erythrocyte count was 4,290,000, leucocytes 9,200, hemoglobin 14 gms. per 100 cc. of blood, bleeding time 1½ minutes, coagulation time 5½ minutes.

Procedure: After sterile technic had been followed, and the foot draped with sterile linens, anesthesia to the toe was effected by means of a toe block. Two cc. of plain Xylocaine®[1] 2% were used. The medial ⅛ of the nail plate was split posteriorly, commencing at the free edge. The splitting was continued beneath the mantle through the nail matrix. A scalpel was then placed in the split of the nail, and an incision made through the mantle, matrix and nail bed to the dorsal aspect of the distal phalanx.

A second incision was then made beginning approximately 1.5 cm. proximal to the nail plate at the proximal end of the original incision. This was extended in a curved manner to the distal end of the original incision, including the hypertrophied tissue. The nail, matrix and wedge of tissue were then dissected free and removed. The edges of the incision were coaptated and sutured. Two interrupted sutures and one partial mattress suture of 000 silk were used.

Postoperative treatment was as follows: The day following the surgery Tincture of Merthiolate®[2] was applied to the area and a new dressing applied. Four days postoperatively the same procedure was used. Seven days following surgery the sutures were removed and the wound re-dressed. On the tenth day the dressing was removed and the patient discharged.

Donald A. Schubert, D.S.C.

Comment:

This is one of the most common operations for onychocryptosis, and one of the most successful. Its only disadvantage seems to be that occasionally the second curved incision is not made wide enough at its proximal end. In this event part of the matrix is left or a small piece cut off, thereby permitting the growth of a spicule of nail.

A SURGICAL PROCEDURE FOR MOLLE LATERAL ASPECT FOURTH TOE

A white woman, aged 38, seen in the hospital, presented a heloma molle lying along the lateral side of the head of the proximal phalanx of the fourth toe left foot.

The heloma did not respond to conservative therapy and had become intolerable.

Radiograph findings indicated an enlargement of the lateral condyle of the head of the proximal phalanx on the fourth

toe, with the medial aspect of the distal phalanx of the fifth toe pressing against it. Urinalysis, blood count and differential were within normal limits.

Procedure: A toe block of the fourth toe was effected with Monocaine 1½%, epinephrine 1:000,000. A dorsolateral longitudinal incision was made beginning one centimeter distal to the head of the proximal phalanx of the fourth toe, and extending proximally to the middle of the shaft. The tissues were then bluntly dissected and the expansion of the Extensor Digitorum Longus tendon exposed. A longitudinal lineal incision was made through the expansion, and the tissues retracted, exposing the lateral condyle of the head of the proximal phalanx. The lateral condyle was then removed and rasped smooth. The sides of the expansion of the tendon were then approximated, and the wound closed with three interrupted sutures.

Postoperative treatment was as follows: Three days postoperatively tincture of Merthiolate®[2] was placed on the wound, and a sterile dressing applied. On the eighth day after the surgery the sutures were removed, tincture of Merthiolate®[2] applied and redressing made. On the twelfth and sixteenth day postoperatively physiotherapy was used. The patient was dismissed at the end of the twenty-first day.

Donald A. Schubert, D.S.C.

Comment: This procedure is very commonly used where there is a heloma lying on the lateral side of the head of the proximal phalanx of the fourth toe. In some instances where there is an enlargement or spur on the base of the distal phalanx, it is also necessary to do surgery on the fifth toe.

L.R.M. and N.H.K.

®[1]Astra Pharmaceutical Products, Inc.
®[2]Eli Lilly & Company.

PHARMACEUTICAL PREPARATIONS FOR THE PROFESSION

HARRY L. HOFFMAN, Ph.G., D.S.C.
Chairman, Council on Chiropodical Therapeutics and Pharmacy

A column devoted to preparations, new and old, with emphasis on their value and uses in everyday chiropody practice. We invite questions, which we shall endeavor to answer, or obtain the answer.

Hydeltra—T.B.A. Suspension

Generic Name: Prednisolone tertiary-butylacetate, Merck. This is a most effective adrenocortical steroid preparation, for extra-articular, intra-articular and intrabursal injection.

Description: Suspension Hydeltra—T.B.A. is prepared as a 20 mg./cc. aqueous suspension.

prednisolone tertiary-butylacetate	2.0%
benzyl alcohol	0.9%
sodium citrate	0.1%
polysorbate 80	0.1%
sorbitol	45 %
water for injection q.s. ad.	100 %

Supplied in 5 cc. vials by Merck, Sharp and Dohme, Division of Merck and Company, Inc., Philadelphia 1, Pa.

Merck, Sharp and Dohme asserts that this is the most effective adrenocortical steroid preparation yet developed for extra-articular, intra-articular and intrabursal injection. As local therapy it is especially in rheumatic and arthritic conditions.

Indications: Recommended for use in the treatment of rheumatoid arthritis, osteoarthritis, traumatic arthritis (provided no intra-articular hemorrhage is present), and acute gouty arthritis.

Injection of this suspension intra-articu-

larly, intrabursally, or into soft tissue sites (depending on the indications) produces local clinical improvement as a result of its anti-inflammatory effect at the site of injection. Significant decrease in pain, stiffness and swelling, and an increase in range of motion as well as a reversal of the pathological process toward normal, becomes apparent shortly after injection, giving the patient more days of freedom from joint symptoms. In many cases relief of symptoms lasts from a few days to several months.

General Information: In Paracentesis of the ankle and joints of the foot, anesthesia with procaine or cyclaine is usually necessary and advisable. Needle for ankle area should be 20 gauge 1½" to 2".

For the tarsal, metatarsal joints and toes, the needle should be 22 gauge 1½" to 2". As already stated for ankle aspiration infiltration with procaine or cyclaine is advisable.

Tarsal and Tarsometatarsal Joints: A roentgenogram of the area will help orient the practitioner in the location best suited for entrance into a specific space. A 22-gauge needle may be used and anesthesia with procaine or cyclaine usually is necessary.

Because of the superficial location of the joints on the dorsum of the foot, this is the site of selection, rather than the plantar surface. The needle may have to be "teased" down between the cartilages and fluid can rarely be aspirated.

Toes: After infiltration with procaine or cyclaine, a 22 gauge needle is inserted from the dorsal surface, either medially or laterally, sliding beneath the extensor tendons and between the cartilaginous surfaces in the direction of the joint surfaces. Traction on the toe may facilitate entrance by separating the articulation.

The paracentesis of inflamed bursae is a well-established therapeutic procedure. Hydeltra—T.B.A. has proven to be valuable for relief of bursal inflammation (bursitis). It has been suggested that this suspension may supersede other therapeutic measures in the treatment of acute bursitis. Following intrabursal injection, Hydeltra—T.B.A. acts rapidly bringing sustained relief in most cases. Easing of pain has been obtained promptly, usually within a few hours, following a single injection. Recurrences are said to be rare.

Administration and Dosage: The usual dose for a knee is 25 mg. (1.0 to 1.5 cc.). In smaller joints 10 to 15 mg. may be sufficient. The recommended dose in smaller joints is 8 to 10 mg. (0.4 to 0.5 cc.). Injections may be repeated at appropriate intervals for continued effect, dependent upon careful observation of the degree of relief and the duration of effect of the first few injections. A severely inflamed joint may require injection once a week. The usual frequency of injection is once every 2 to 3 weeks.

Continued observation is necessary since local remission does not continue indefinitely. The length of remission depends somewhat on the particular joint involved.

Doses of more than 50 mg. are not recommended.

How Supplied: In 5 cc. vials, containing 25 mg. hydrocortisone tertiary-butylacetate in each cc.

Precautions: No attempts should be made to alter the formulation of Suspension Hydeltra—T.B.A. Dilution or mixing with other substances may affect the state of suspension and reduce its effectiveness.

Suspension Hydeltra—T.B.A. should not be used in acute infectious arthritis (e.g., gonococcal or tuberculous), or in other acute infectious conditions.

Suspension Hydeltra—T.B.A. is for intrasynovial injection and for injection into soft tissues only. It must not be administered by any other route.

Exacerbation of pain and further limitation of joint motion as well as fever, malaise, and capsular distention may indicate

that the arthritis has become septic. Antibiotic therapy should be instituted immediately and continue for 7 to 10 days after all evidence of infection has disappeared. For a few hours following injection in some patients of Hydeltra–T.B.A., there may be a continuation or even an increase of local discomfort (post-injection flare) in the joint involved. However, this is usually followed by effective relief of pain and improvement of local function.

Refrigeration is not necessary (of this preparation) and agglomeration may occur if storage is at low temperature.

Ecotrin

Description: A specially coated Aspirin tablet produced by Smith, Kline and French Laboratories, Philadelphia, Pa.

Action and Uses: Smith, Kline and French's Duentric-coated 'Ecotrin' tablets make possible, for the first time, high, long-term dosage of aspirin without gastric upset. 'Ecotrin' is, therefore, useful wherever high doses of aspirin are needed or wherever gastric discomfort makes therapy with uncoated aspirin tablets impractical–particularly in rheumatic disease.

Advantages: The value of high doses of aspirin, particularly in rheumatic conditions, is well documented. Because uncoated aspirin disintegrates in the stomach and produces gastric upsets in many patients, the dosage often has to be reduced or even discontinued.

'Ecotrin' tablets, due to the special 'Duentric coating, offer three advantages:

1. Full analgesic, antipyretic and anti-inflammatory effects of aspirin.
2. Prompt absorption in the small intestine.
3. No gastric irritation.

Indications: Due to the 'Duentric' coating, Ecotrin is useful wherever aspirin causes gastric upset. It is especially valuable in conditions requiring massive doses and prolonged aspirin therapy, such as:

rheumatoid arthritis	osteoarthritis
acute rheumatic fever	bursitis
chronic pain	myalgia
gout spondylitis	myositis

Smith, Kline and French tells us further that many rheumatologists have used 'Ecotrin' in conjunction with steroids, and thereby reduced steroid dosage.

Note: Clinicians report that 'Ecotrin' is of particular value in patients suffering from gastric ulcers who are at the same time in pain for other reasons.

Suggested Dosage: Rheumatologists advocate high aspirin dosage in arthritic and rheumatic conditions (up to 80 gr. daily) and in acute rheumatic fever (up to 120 gr. daily). In arthritic and rheumatic conditions. concomitant use of 'Ecotrin' often permits a reduction in steroid dosage.

Supply: 'Ecotrin' in 5 gr. 'Duentric'–coated tablets in bottles of 100.

Typical Prescription

Rx Tabs. Ecotrin
S. K. & F.
Dispense # L

Sig: Take 2 tablets t.i.d.

Contraindications: The only absolute contraindication to 'Ecotrin' is the relatively rare frank aspirin sensitivity. 'Ecotrin' eliminates irritation of the gastric mucosa preventing gastric distress, ulceration due to aspirin and similar side effects of aspirin.

Cyclaine Hcl. Jelly (Topical anesthetic)

Description: Cyclaine Jelly is a local anesthetic jelly containing 5% of hexylcaine hydrochloride in a water soluble base. This useful dosage form containing a potent local anesthetic agent is designed specifically for surface anesthesia. Topical applications for the nose and throat could prove useful in Chiropody as a topical or surface anesthetic.

Supply: In 1 ounce tubes. By Merck, Sharp and Dohme Laboratories.

ABSTRACTS FROM THE CHIROPODY LITERATURE

ROBERT SHOR, D.S.C.
LOS ANGELES, CALIF.
Chairman, Committee on Publications

Editors of Local, State and Regional Publications are requested to provide copies to the Chairman of the N.A.C. Committee on Publications who is preparing this section of the Journal.

CONNECTICUT CHIROPODIST

Procedure in Pigeon Toeing, Michael V. Simko, Connecticut Chiropodist, 4: 3-J, (Oct. 1956), Bridgeport, Conn.

Dr. Simko presents a compendium of authoritative opinions relative to the important subject of Pigeon Toeing. Procedures by prominent individuals are described, among which are—Laurence Jones, M.D., recommending "Training Straps" as used in the Orthopedic Hospital, Los Angeles; Dr. Herman Tax recommending the Denis-Brown Bar; Dr. A. Rubin's procedure of a two-part plate with wedge or lift, and others.

CURRENT CHIROPODY

Radiation Problems, R. R. Krout, Current Chiropody, 3: 7-8, Mar. 1957.

The results of findings by experts on atomic radiation made public in a report of the National Academy of Sciences in June 1956 is discussed.

The pathological effects upon the blood due to sensitivity to the blood-forming organs and upon specific tissues such as bone, lungs, thyroid, C.N.S., gonads, and embryos are briefly outlined.

Warnings have been sounded that radiation damages the growing epiphyses of bones. In this vein, chiropodists should warn parents against shoefitters trying to sell shoes by subjecting children to unnecessary fluoroscopic radiation.

Aside from the legitimate use of x-radiations, humanity must slow down with its use of radiations lest it destroy the integrity of tissues.

The Resistant Heloma, Alan K. Whitney, Current Chiropody, 2: 9-12, (Feb. 1957).

A review of the literature represented regarding the chronic, recurrent heloma. Whitney, when considering curative therapy, classifies helomata in terms of relative chronicity for resistance to conservative treatment in direct proportion to fibrotic change. A therapeutic guide for the cure of Helomata is offered. The Chiropodist armed with his examination findings can apply the general and specific principles of treatment as found in the guide.

FOOTPRINTS OF THE CHIROPODY ASSOCIATION OF FLORIDA

Melmac Cup for Painful Calcaneal Conditions. Robert A. Giudice, Footprints, Chir. Assn. of Florida, 4: 5-6, (Jan. 1957), Miami Beach, Fla.

Giudice states that the melmac cup is an effective prosthetic device in the follow-up therapy of painful calcaneal conditions. The device is instituted after one has obtained relief of symptoms by use of strapping and/or padding (i.e. Koppe strap, high or low Dye straps, etc.).

Principally, the cup maintains the fibrofatty pad in its proper place on the plantar of the calcaneous—Valgus rotation of the calcaneous is prevented and the stress caused by the pull of the plantar fascia reduced.

The technique of fabricating this prosthetic device is discussed in detail.

FOOTPRINTS OF THE CHIROPODY ASSOCIATION OF AMERICA

Diabetic Ulceration of the Great Toe, Ben Tanner, Footprints 5:3, March, 1957 (Fla.)

Tanner explains a favorite mode of therapy for diabetic ulceration of the great toe.

After the usual debridement of the hyperkeratotic tissue surrounding the ulcer, the area is sprayed with an antiseptic wetting agent. Ulceration is painted with 2% gentian violet. Following this an aperture of moleskin and Spectrocin Ointment is applied to ulcer area. In turn this is covered with ⅛" adhesive foam.

Patient is advised against bathing toe and rescheduled in 72 hours. Tanner feels that soaking or bathing devitalizes tissue and interferes with healing.

The second visit basically is a repetition of the above treatment. If no infection is present and granulation tissue is apparent then the Spectrocin Ointment is replaced by Panthoderm Cream.

INDIANA STATE PODIATRY JOURNAL

The Phenol-Alcohol Technique for Toenail Excision, S. P. Nyman, Ind. State Podiatry J., Mar. 1957, Vol. 21: 45.

Nyman describes a modification of the technique as reported by Boll in 1945 for the surgical-chemical method for removal of toenails. The selection for this procedure requires the same consideration as would be observed for any other form of minor foot surgery.

Basically, the technique is the application of liquefied phenol rubbed well into an area by means of a small cotton-tipped applicator. Immediately following this the liquefied phenol is washed from the tissues with alcohol.

Liquefied phenol precipitates the proteins and its action is self-limiting. The alcohol is not chemically compatible with phenol and thus washes the phenol out of the tissues.

JOURNAL OF PODIATRY

Positive Metatarsal Therapy, H. Weiner, Journal of Podiatry, 3: 10-12 (March) 1957.

Over 90% of foot sufferers with mechanical disturbances appear with complaints in the forefoot. Weiner reviews the metatarsal area of the foot and discusses the physiological function of the foot.

One of the most valuable measures over the years for relieving painful areas in the metatarsals has been the skillful use of felt paddings. The failures resulting from the use of pads are due to the non-cushioning of the metatarsal heads. Weiner has overcome this fault by devising a felt pad, namely the "Weiner Pad," which is longer and wider than the conventional felt metatarsal pads used. The pad extends from the interdigital spaces to the base of the metatarsals.

Once having overcome the subjective symptoms the author then considers a more permanent effective measure of relief. Moulded shoes are evaluated and a simple idea as to the "right shoe" is presented.

NEW JERSEY CHIROPODY JOURNAL

Practice Procedure and Management of Forefoot Rehabilitation with Mollo—Part I, II, L. Hymes, New Jersey Chiropody Journal.

In Part I of Hymes' article on practice procedure, he discusses the patient's C.M.L. (chiropody mental level) and his approach to forefoot rehabilitation.

The article is similar to those written by other men in the field who are proponents of forefoot balancing and patient management.

Part II defines such terms as S.P.S. (shoe padding study) and G.O.S. (Gamble Orthopedic Study). Calluses are divided into Dynamic and Static depending on location, etiology and correction.

Hymes presents a hypothetical case, discusses the patient's care and management through a series of office visits.

DIGESTS FROM THE LITERATURE

Anyone wishing to read the complete article, if not available in your local library, may borrow it through interlibrary loan. A microfilm may be borrowed from the National Medical Library, Washington 25, D. C., or a photo-duplication may be obtained from that library at a cost of fifty cents for five consecutive pages.

ANESTHESIA AND ANALGESIA

The Non-Barbiturate Sedatives, W. G. Sears, Practitioner 176: 308-14, 1956.

The use of the older sedatives, hyoscine, hydrobromide, paraldehyde, chloral hydrate and bromides, and their dosages are discussed; also the ureides—bromvaletone, carbromal and sedormid. The newer non-barbiturate sedatives include glutethimide, moludar, valmid, dipipanone, methylpentynol. Other drugs have sedative side effects, such as the antihistamines, chlorpromazine, mephenesin, and hypotensive Rauwolfia derivatives and its alkaloid reserpine and benactyzine. It must be remembered that the various barbiturates while they are useful because of short, medium or long-acting properties, and because some can be given orally, intramuscularly and even intravenously, however, they can produce such side effects as idiosyncrasies, toxic rashes, and addiction. Long-continued use may induce insomnia, depression and anxiety symptoms, and also withdrawal symptoms if suddenly discontinued.

CIRCULATORY SYSTEM

Clinical Studies on the Use of Parenteral Trypsin and Chymotrypsin in Peripheral Vascular Disease, L. S. Kryle, E. Calvelli, et al. Angiology 7: 287-91, 1956.

A group of 70 patients with various complaints were treated: 18 with trypsin intravenously; 37 intramuscularly; 9 with chymotrypsin intravenously and 15 intramuscularly; a second course was required only in 3 cases of relapse or recurrence. Trypsin proved most effective in varicose ulcers, acute thrombophlebitis, and in infection in diabetes with little or no gangrene. Healing of varicose ulcers occurred within 48 to 72 hours after initial treatment. Amputation was averted in two cases of diabetes; however, thrombosis remains in these cases and conventional therapy must be continued, such as anticoagulants, hot wet packs and bed rest. Trypsin is only an adjunct in the treatment. No patient showed serious toxic reactions. No significant difference was noted between the actions of the two drugs nor advantages between intravenous and intramuscular administration, except that the latter is easier to use. Further study is indicated.

Present Status of the Treatment of Varicose Veins, D. A. Felder. Minnesota Med. 39: 228-29, 1956.

Ligation and intraluminal stripping produce gratifying results in removing large superficial saphenous veins, but this method has not proved any better in many instances than adequate high and serial ligation. Results have been excellent in about eight months after high ligation at the sapheno-femoral junction. Superficial varices that remain after eight months should be obliterated by the airfoam technique of Meyer (3 per cent sodium sotradecol mixed with three times as much air to make a foam, which is injected into the vein of the patient who is in a reclining position). Varicosities of pregnancy are best treated by elevation of the foot of the bed, good elastic support when out of bed, avoidance

of long sitting or standing, and daily walks. Ligation of superficial femoral vein and popliteal vein ligation are no longer popular. In postphlebitic limbs removal or obliteration of incompetent superficial veins is no longer hazardous.

Varicose Veins and Stasis Problems: The Industrial Physician's Interest and Potentialities, F. B. Wagner, Jr., P. H. Fried, et al. Indust. Med. & Surg. 25: 337-42, 1956.

Varicose veins are of three types: primary, secondary, and telangiectatic. Each has a different etiology, characteristic symptoms and therapy, but a patient may have two or all three types in combination. Primary varicose veins are hereditary in 45 to 65 per cent of cases. The important hereditary factors are absence of valves above the saphenofemoral junction and absence of smooth muscle and elastic tissue in the vein wall opposite the valves. Strain does not produce primary varicose veins however hard the work. Individuals with a marked hereditary predisposition develop these veins despite all preventive efforts; protracted standing will accentuate the condition in these persons. In the primary type dilation of the superficial and perforating veins causes their valves to function incompetently, thereby permitting reversal of blood flow; increase in venous pressure is transmitted to the venous capillaries in which a hypertensive state develops and about 2 years, when another exacerbation stasis, or complete drainage, of venous blood from tissues ensues. Pigmentation about the malleoli and lower third of the leg is an early sign of stasis; edema occurs only on long standing, which if untreated leads to fibrosis; phlebitis caused by clotted blood may become suppurative if a minor break occurs in the skin. Ulceration is due to a combination of stasis, trauma, and infection. Cellulitis may start in the edges of a neglected ulcer. Varicose eczema starting in the supra-malleolar area may spread over the dorsum of the foot, up the leg and beyond the stasis area. Rupture of the paper-thin skin over the varix may occur, resulting in ecchymosis and hematoma. Treatment by the industrial physician consists of support by use of a properly fitted elastic stocking extending from the base of the toes to the level of the tibial tuberosity and including the heel. The stocking used daily requires replacement at least three times a year because of loss of elasticity through wear and washing. Surgical therapy when required should be given by someone specially trained in this field. Sclerotherapy is outmoded. Surgery is contraindicated during stasis because of poor wound healing and danger of infection. Ulceration, phlebitis and dermatitis are treated by application of Unna's paste bandage or "boot." Antibiotic therapy is not needed unless suppuration occurs.

Secondary varicose veins (postphlebitic leg) following surgical operations heal spontaneously in 25 per cent of cases. In 75 per cent some disability remains, ulceration occurring in 30 per cent of these. Problems of care after returning to work challenge the industrial physician. Secondary varicose veins result from thrombosis and inflammation in the deep and perforating veins and dilation of superficial veins providing collateral circulation. The problem of stasis is serious in these cases since eradication of secondary varicose veins does not correct the primary fault—reflux in the deep veins themselves. A deep venous insufficiency attended by abnormal lymphatic drainage results in chronic edema of the leg after prolonged standing, and chronic malnutrition of lower leg tissues. A chronic ulcer then develops just above the medial malleolus. Treatment is by use of proper elastic compression by a stocking or Unna boot. This therapy produces a corrected leg, not a cured leg. Resection is not required unless reflux into

the superficial venous system is not controlled.

Telangiectasis or dilation of capillaries and small venules is usually a dermatologic condition, of congenital, hereditary or degenerative cause or secondary to wind burn, roentgen rays, arterial or venous insufficiency and hormonal changes due to pregnancy. Telangiectasia of the lower extremities accompanies the aging process. Sheer ace-nylon hosiery should be worn except when there is stasis. Acetyl salicylic acid or phenacetin tablets alleviate premenstrual pain. The lesions are aggravated during pregnancy; a marked regression occurs within 48 hours after delivery. The value of estrogenic hormonal therapy is debatable.

Alteration and Regeneration of the Endothelium in Venous Thrombosis, G. Impallomeni. Angiology 7: 268-78, 1956.

Changes in endothelium not only cause, but also determine, the character, possibility and frequency of embolic complications. Modifications in endothelium occurring in venous stasis, varices, phlebothrombosis and thromboplebitis, and the reconstruction of damaged or changed endothelium were studied in vein segments from 292 patients operated on for various vein diseases. The structural of normal endothelium is described. The weak point in this pattern is the cement substance between the endothelial cells; here first occurs precipitation of fibrin and platelets and agglutination of red blood cells, due to venous stasis. The giant cells normally present in abundance become increasingly common. In phlebothrombosis large deposits of fibrin and cellular elements of blood tend to cover the endothelial surface. The endothelial lesions become more serious in acute thrombophlebitis, with almost complete destruction of endothelium, but numerous small islands of endothelium remain. Regeneration of the endothelium is perfect in recanalized thrombi, no distinction between normal and reconstructed endothelium can be made.

Thromboangiitis Obliterans in Women: Gangrene; Vessel Graft, T. Hiertonn, F. Lund and J. Philipson. Angiology 7: 233-42, 1956.

A case of thromboangiitis obliterans, very rare in women, is reported in a woman of 43 years who had pain in her legs for 30 years, with occasional migratory attacks of superficial thrombophlebitis. Three years before the operation here reported she had bilateral lumbar sympathectomy which enabled her to walk with less discomfort, for about 2 years, when another exacerbation occurred. Intravenous and intra-arterial injections and nitroglycerin ointment applications brought some relief. A few months later lymphangitis with rubor, swelling and pain of the right foot and lower leg, with tips of all toes but one having partly infected ulcerated areas, and a small necrotic area on the lateral aspect of that foot, and inability to walk or stand erect because of pain, led to consideration of amputation. But the presence of localized arterial thrombosis led to an attempt to restore circulation in the femoral popliteal artery. Local resection and reconstruction of the arterial pathway with a venous graft produced rapid recession of severe ischemia and healing of the ulcers and the necrosis cleared up. She was able to walk slowly and to do her housework and in good physical conditions 3½ years later. Permanent dicumerol therapy, 0.025 to 0.05 gm. daily, maintained her prothrombin index (Quick) at a level of 35-50; total abstention from smoking is required. The result of treatment is definitely encouraging, but the end-result is not predictable.

Congenital Arteriovenous Fistulas in the Extremities, G. Coursley, J. C. Ivins and N. W. Barker. Angiology 7: 201-17, 1956.

Congenital arteriovenous fistulas may be

found in any part of the body but are most common in the extremities. Often it is difficult to eradicate them surgically because they may be multiple and extensive. Clinical, laboratory and therapeutic aspects of such fistulas observed in 69 patients over a 19-year period are presented. Ages ranged from 15 months to 73 years, but 53 patients were less than 30 years old, and of these, 31 were seen at ages ranging from infancy to adolescence. Eleven had associated anomalies. The fistulas were located in the lower limb in 51 cases (almost 74 per cent). The chief symptoms were varices, enlargement of the part, pain, vascular mass and increased warmth of the skin (in that order). Bruit was noted in 24 patients, with an associated thrill in 13 of these. There was diffuse involvement of thigh and leg in 31; 9 had an ulcer. Of the total group, 34 had received previous treatment, surgical or sclerosing injections mostly; a few received roentgen or radium therapy; 2 patients had amputation of toes.

Forty-one received surgical or sclerosing therapy; the remainder were given conservative treatment: hospitalization for control of edema and healing of ulcers, and use of elastic supports and heel lifts as needed. The surgical and sclerosing injection treatment consisted of treatment of varices, direct attack on the fistulous area, amputations (in 2) and in a few, stapling of knee epiphyses, capsulotomy of knee, lumbar sympathectomy. Twenty of these patients returned for further surgery; 6 others had further surgical or injection therapy elsewhere. Follow-up on 53 patients showed discouraging results: in 7 results were good, fair in 5; 21 had recurrence, 6 had amputations and 14 showed little change. A well-localized process can be eradicated by excision, but surgical cure, except amputation, is extremely difficult in cases of extensive involvement of the vascular tree. Epiphyseal stapling or capsulotomy in some cases corrects inequalities of limb length, and restores joint function. The presence of shunts within one or more bones of the limb causes surgical failure, and a bony fistula unless excised at time of surgery will make recurrence inevitable.

DERMATOLOGY, ALLERGY AND FUNGUS DISEASES

The Effect of the Topical Application of Corticotrophin, Hydrocortisone, and Fluorocortisone on the Process of Cutaneous Inflammation, A. Scott and F. Kalz. J. Invest. Dermat. 26: 361-78, 1956.

Normal skin of 149 volunteers, aged 7 to 86, was tested to determine alterations in the process of cutaneous inflammation by topical application of corticotrophin, hydrocortisone and fluorocortisone. Irritation was produced by use of mustard oil and nitric acid, and with erythema-inducing doses of ultraviolet rays. Inhibition of inflammation resulted in 1 hour after hormone contact with the skin, the maximal effect occurred in 2 hours, even though the contact was continued for 6 hours. This seemed to suggest that the skin absorbs only limited quantities of the hormone. Equal effects were obtained with concentrations of 1% hydrocortisone, 0.25% fluorocortisone and 5% corticotrophin. Complete inhibition of inflammation was obtained in 75 per cent of cases in which hydrocortisone or fluorocortisone was used and in 60 per cent where ACTH was used. Only one-half of the cases exposed to ultraviolet rays reacted if pretreated with these hormones. Since inhibition of the inflammatory process follows use of the hormones only if they are present in sufficient concentration before the inflammatory agent is applied, and ineffective if applied to the site after the inflammation has been initiated, it seems that the hormones act protectively on the skin, but are unable to halt the inflammation once it is started. A group of patients who had been on massive doses of cortisone in treatment of

pemphigus vulgaris, with depression of adrenocortical function for long periods but without controlling the disease, were healed of their lesions when placed on ACTH, although laboratory tests of endogenous adrenocortical stimulation showed no change in the target gland.

Delayed Sensitivity of the Skin to Phenylmercuric Acetate, F. W. Sunderman, M. F. Hawthorne and G. L. Baker. Arch. Indust. Health 13: 574-77, 1956.

A research chemist spilled a saturated solution of phenylmercuric acid over his right hand, which he immediately washed off. Pruritis and erythema developed on the back of his hand eight hours later. The fluid from the blisters yielded mercury in a concentration of 40 mg. per liter. Following aspiration of the fluid from the blisters and application of anesthetic ointments and sterile dressings, the lesion healed without scarring in two to three weeks. Two similar cases with delayed symptoms were found in the literature. When vesication develops after contact with organomercuric sales, the serous fluid should be aspirated quickly to remove the accumulated mercury.

Tinea Pedis in General Practice, W. Gould and M. Schwartz. Practitioner 176: 670-74, 1956.

Forty-five patients with tinea pedis were treated with penotrane, either in the form of an aqueous solution (0.1%), a jelly (0.1%), a tincture (0.1%) containing 50% alcohol, or as a dusting powder (0.4%). Strict foot hygiene was required: washing, of the feet twice daily, using separate towels, not walking in bare feet on bathroom floors and mats, and daily changing into clean socks. The powder was dusted on the feet, socks and shoes. Solution, tincture or jelly was applied twice daily. Very good results were reported in 38 per cent of cases, with complete healing of lesions and absence of discomfort; good results in 42 per cent, with lesions healed, but some discomfort, particularly in hot weather, but controlled with dusting powder; fair in 15.5 per cent with relief from irritation but lesions not healed; poor or no results occurred in 4.5 per cent. Duration before this treatment of these patients had been from 2 months to 11 years. The best results and most rapid relief followed use of an aqueous solution. Tincture always produced exacerbation of symptoms. Prolonged use of the jelly renewed sogginess of the tissues. Dusting powder continually used afforded relief from irritation and burning of the feet.

Use of Detergents for Direct Mycologic Examination, G. Achten. J. Invest. Dermat. 26: 389-97, 1956.

A rapid, correct diagnosis of numerous skin diseases may be made by mycologic examination of scales, hairs and nail scrapings. The basic dyes used in this study were basic fuchin, Nile blue, Bismarck brown and Janus green; results were best with the first. Aminol, an aqueous solution of 0.1% cationic surface-active agent, with 0.2% basic fusin cleared and stained within a few minutes. Scales, hairs, nail scrapings were cleared. Mycelial threads and spore chains stained pink within the hairs. Apparently Aminol has antifungal properties, according to the concentration of the surface-active agent and the contact time.

Evaluation of Nitrostyrenes as Antifungal Agents. I. In Vitro Studies, F. C. Bocobo, A. C. Curtis, et al. Antibiotics & Chemother. 6: 385-90, 1956.

Six *B*-nitrostyrene derivatives were reported in an earlier paper as having antifungal activity which seemed a group property of the *B*-nitrostyrenes. Eleven addi-

tional derivatives of this group showed like antifungal activity. In the vehicles used there is a sufficient stability, and especially in oily preparations with biologic activity retained after two weeks. In vitro antifungal activity was decreased by adding whole blood of man, rabbit, guinea pig or mouse. This finding does not indicate hopeful results in use of these compounds in treatment of mycotic infections which require oral or parenteral administration with absorption of the drug into the blood circulation.

The Effect of a New Antiseptic (1,6-DI-4'-Chlorophenyldiguanidohexane) on Skin Flora, G. E. Meyers, W. C. Mackenzie and K. A. Ward. Canad. J. Microb. 2: 87-93, 1956.

A tincture and an aqueous solution containing 0.5% of this solution (AY 5321) were tested in vivo, as preoperative skin antiseptics. After a measurement of various times of exposure to the antiseptic at various operative sites, biopsies were performed, and the bacterial activity tested. Both the aqueous solution and the tincture showed marked skin disinfective properties against many types of microorganisms. No skin irritations caused by this agent were noted in the 151 subjects studied.

Topical Hydrocortisone Therapy in Diseases of the Skin; A Clinical Evaluation, I. M. Wartzki and B. R. Entwisle. Med. J. Australia 1: 318-26, 1956.

An analysis of 100 cases of diseases of the skin with local application of hydrocortisone ointment is reported. The best results were obtained in erythema multiforma of the lips, papular urticaria, dermatitis and eczema of the face (particularly the eyelids), eczema of the scrotum, pruritis ani et vulva, and intertrigo of the genito-crural and gluteal folds. Results were not good in Besnier's prurigo, diskoid eczema and otitis externa. The condition was aggravated in four cases of scrotal eczema and in two cases of pruritis ani and intertrigo of the genito-crural and gluteal folds. Although hydrocortisone is effective in some skin diseases, it should not be used indiscriminately as the results obtained are not always as good as those from other methods. Its use is contraindicated when there is an infection of the skin, unless it is combined with anti-infective measures with which it is compatible.

Use of Liquid Oxygen in Dermatology, C. W. Laymon and C. J. Balogh. Minnesota Med. 39: 151-52, 1956.

Liquid oxygen is applied with an ordinary cotton swab, or cotton wrapped around a modern applicator and dipped into the liquid and applied to the lesion; moderate pressure in most cases is followed by almost instantaneous freezing. Palmar or plantar verrucas become frozen to their entire depth within a few seconds. Application causes little pain, but upon thawing pain is increased for several hours. The bulla which forms reaches its height in 2 or 3 days. Hemorrhage of the lesion need not be alarming. The patient is told to return in one week; the top of the bulla is removed and the lesion dressed. Healing requires 2 to 4 weeks depending upon size and thickness of the lesion. This method used in 34 cases of hemangioma was satisfactory in the 25 who returned for observation. Liquid oxygen proved of definite value in topical treatment of chronic discoid lupus erythematosus and also in 12 out of 16 cases of keloid; 3 patients did not return and 1 showed no improvement. Liquid oxygen is particularly valuable in treatment of mosaic warts.

DIABETES

Studies on the Pathogenesis of Diabetic Neuropathy; Survey of the Literature and Own Working Hypothesis, S-E. Fagerberg. Acta. med. Scand. 154: 145-50, 1956.

A review of the literature is presented regarding various views about the pathogenesis of diabetic neuropathy, with a special study of the vascular theory which has been lately supported by laboratory research. Most cases occur in the lower extremities. It was demonstrated by inter-alia, histopathologic examinations of the sural nerve that this disease has the same pathogenesis as retinopathy and nephropathy.

DRUG THERAPY

Activity of Histamine as Spreading Factor and the Effect of Cortisone; Skin Spreading Effect of Histamine and Its Influence by Cortisone, A. Schmidt. Acta. pharm. et toxicol. 12: 88-95, 1956.

To determine whether the inhibiting action of cortisone on skin spread can be explained as an action of the histamine contained in the skin, and therefore on the local edema, study was made of the permeability of isolated connective tissue fascia from mice which had been treated with cortisone, and, second, the effect of antihistamine mepyramine on the skin spread, and, also, the influence of cortisone on the H-substance concentration in connective tissue of the skin of guinea pigs. The findings were that no inhibition of the permeability of hyaluronidase-treated fascia occurred if the mice were treated first with cortisone. It is suggested that the cortisone induced inhibition of skin spread is produced partly by changes in the capillary permeability and consequent tendency to local edema. Skin spread was inhibited in rabbits by mephramine following intracutaneous injection of India ink-saline with or without hyaluronidase. Cortisone therapy of guinea pigs reduced histamine content and H-substance in the skin. Reduced permeability of connective tissue by cortisone may be explained in part as an action of H-substance concentration in the connective tissue.

MEDICAL PRACTICE; GROUP PRACTICE

Role of Medical Service Corps Officers in the Management of Mass Casualties, K. L. Knight. Military Med. 118: 393-95, 1956.

The medical element acts in eleven tactical teams at the time of mass casualties. The general duties of each echelon of medical service are outlined. The training of the Medical Service Corps Officer in the administration of the medical department activities enables him to play a valuable role in management of casualties following a disaster.

Analysis of Professional Factors in Medical Malpractice Claims, J. F. Sadusk, Jr. J.A.M.A. 161: 442-47, 1956.

An analysis is presented of the professional factors in a group liability program over a 9-year period, in two counties of California. These factors include (1) the type of medical program involved (surgical versus medical), in which obstetrics and gynecology, orthopedics, and general surgery lead; (2) the individual hospital; (3) multiple claims against certain physicians. Factors which proved of no importance were age of the physician, sex of the physician, the geographic area of practice, and general practice versus specialty practice. Since there is a great incidence of malpractice among hospitals for the acts of their physicians, each hospital should survey its staff and regulate the practice of physicians who are responsible for an unusual number of malpractice claims. Malpractice-prone physicians are a hazard to any professional liability program. Some recognized causes of malpractice losses are

criticism of physicians regarding treatment given by other physicians; attempts of patients to cancel physicians' fees by charging malpractice; tendency of the public to obtain remuneration for real or fancied damage; increased tendency of juries to award more frequent and higher awards to claimants.

Peaceful Coexistence with Osteopaths? L. W. Johnson. Mod. Hosp. 86: 51-52, 1956.

Experiences in four California hospitals where the law allows practice of both M.D.'s and O.D.'s, who care for their patients in separate buildings, each with its own staff and administrator, but under a single M.D. supervisor, showed the hospital stay of patients with similar diagnoses was approximately the same. Friction between the two groups was gradually decreasing. The records of these joint-staff hospitals indicate that medical men and osteopaths can work together. Medical observers suggest that further integration may help to reduce hospital costs through abolishment of wasted hospital facilities, and raising of the level of medical care in many rural areas now entirely dependent upon osteopaths

The Behavioral Sciences and the Professions, D. G. French. Pub. Health Rep. 71: 504-10, 1956.

Surveys of behavioral science, sponsored by the Ford Foundation, carried out by five universities, are presented and evaluated as a first step in establishment of communication and identifying common interests and goals. Fundamental differences between the social sciences and the "professions" are discussed, for example, the antibureaucratic, antihierarchical attitude of the social scientist and the ready adjustment of the professional to administrative policies and channels and to organizational requirements. There is also a difference in goals, the social scientist is interested in development of adequate laws, generalizations, or theories to account for that part of the world he studies; the practitioner's typical goal is knowledge as a guide to actions for which he is responsible. The contrasting methods used by the social sciences and the professions are also described and the possibilities of collaborative work. The belief is expressed that medical social work is in a strategic position to demonstrate effective ways of bringing the specialized approaches of behavioral sciences to the problems of practice in both the health and welfare fields.

MUSCULOSKELETAL SYSTEM

Transposition of the Tibialis Anterior in the Treatment of Paralytic Talipes Calcaneus, C. H. Herndon, J. M. Strong and C. H. Heyman. J. Bone and Jt. Surg. 38-A: 751-60, 1956.

Paralytic talipes calcaneus, one of the most disabling deformities of the foot, when allowed to progress until development of equinus deformity of the forepart of the foot, contracture of the plantar fascia, cavus, and clawing of the toes, is exceedingly difficult to correct. Early transference of the tibial anterior into the heel in selected cases has proved an effective method of preventing a serious paralytic talipes calcaneus. To restore plantar flexion before this occurs, tendon transposition has been performed as early as 18 months after onset of acute poliomyelitis, as soon as no further recovery of power in the gastricnemius or soleus seems possible. The tibialis anterior, next to the gastricnemius and soleus, is the strongest muscle in the foot and usually apt to replace lost plantar flexion. The technique is described as used in 14 patients with residual paralysis of the triceps surae following poliomyelitis. The operation was too recent to evaluate its effect in two patients, but of the remaining 12, aged between 3 and 12 years, and followed up after

an average of 3 years, the results were excellent in 7, good in 3 and fair in 2; in the 2 fair cases the tibialis anterior was not sufficiently strong. However, though a good push-off was not restored in these 2, a severe talipes calcaneus was prevented. Five patients proved also able to raise the opposite foot from the floor and then rise on the toes on the affected side without assistance.

Retardation of Growth After Traumatic Epiphyseal Separation, G. Redell. Acta orthoped. Scand. 25: 97-104, 1955.

Many cases are reported of traumatic epiphyseal separation in the long bones of the extremities, but rarely is retardation of growth mentioned as a late sequela. Two cases are described. A boy aged 15 fractured his wrist; a half-year later deformity of the wrist was observed, which was found due to epiphyseal separation. At operation the ulnar diaphysis was divided at two points and a piece 17 mm. long resected; the two cut ends were fixed to each other with a small peg of prepared bone and by ulnar deviation a good contact was accomplished. Ten years later he had full power and motility of the wrist. The other case was that of a girl of 13 who shot herself in the hand. The ragged distal end of the radius was seen where the bullet had torn off a small fragment of bone. The wound was excised and healed well. When 7½ years old, malformation of the wrist was noted. At operation the distal end of the epiphysis of the radius was exposed and a wedge-shaped piece of ulnar diaphysis removed, and the ends of the fragments fixed by a Kirschner wire introduced from the olecranon. The radial fragments were kept in place by a steel wire pulled through two bore-holes. Two years later there was a further deviation of the wrist; the forearm was shorter than the other. A wedge-shaped osteotomy was done on the radial diaphysis and the loose fragments rotated about 180 degrees. The epiphysis could then be rotated in a more normal position. About 6 months later the deformity had again increased; it was now the same as at the first operation. It was not decided what further to do at that time.

Discussion on the Clinical and Electromyographic Aspects of Polymyositis (by Several Authors). Proc. Roy. Soc. Med. 49: 105-14, 1956.

A symposium by four writers is presented on the various aspects of polymyositis, its treatment and prognosis.

Polymyositis: Clinical Aspects (F. J. Nattrass). Interest has been renewed in this disease because muscular disease is frequently associated with skin changes and because of the known affinity of such cases with others of the collagen-vascular or connective tissue diseases. However, polymyositis may occur with little or no skin changes and present a clinical picture resembling primary muscular dystrophy. The histologic picture in muscle biospy, prognosis and treatment is entirely different in the two diseases. In 8 cases studied in children, a diagnosis of muscular dystrophy was invariably made. Five made spontaneous recovery and three responded to vitamin E therapy. In adult cases the disease resembles the fascioscapulohumeral type or limb-girdle type of muscular dystrophy rather than the Duchenne or pseudohypertrophic type of childhood dystrophy. Unlike muscular dystrophy, until an advanced stage is reached, the tendon reflexes may be retained and unduly active. Cases which have been reported earlier as responding to wheat-germ and/or vitamin E, diagnosed as muscular dystrophy may have been polymyositis, since true muscular dystrophy is not influenced by such therapy. Muscle biopsy is disapproved in cases of typical muscular dystrophy with a family history, but when there is a negative family

history, and unexpectedly rapid onset and course, or occurrence of remissions, such diagnosis is essential.

Polymyositis: Diagnosis, Pathology, Prognosis and Treatment (J. N. Walton): In a series of 40 cases of polymyositis all showed symptoms and signs of muscle disease, with weakness and/or atrophy. Muscle sections obtained in 34 cases all revealed degenerative and/or inflammatory process dissimilar to progressive muscular dystrophy. The term polymyositis is a misnomer since certain cases show no inflammation. The 40 cases were divided into four groups: Group I (14 cases), polymyositis, of childhood, young adults, later life, and acute with myoglobinuria. Many were wrongly diagnosed. None showed skin changes, significant muscle pain or weakness; the disease was slowly progressive in some, rapid in others. Group II (12 cases), polymyositis with muscle weakness prominent, with associated features of a collagen disease, or dermatomyositis with predominant muscle weakness, and minimal or transient skin changes. Group III (8 cases), collagen disease with muscular disability of secondary importance, or dermatomyositis with florid skin changes and less muscular involvement. Group IV (6 cases), polymyositis ("carcinomatous myopathy") or dermatomyositis associated with malignant disease. At any time during an illness the case can move from one group to another. The pathologic features in all groups are: (1) variation in fiber size and central migration of sarcolemmal nuclei, particularly in chronic cases; or, (2) most characteristic, necrosis and active phagocytosis of muscle fiber whole or segment of fiber; (3) cellular infiltrates present, scanty or absent; (4) generally evidence of muscular regeneration. In all groups, except malignant cases, some patients recover or improve spontaneously; disease is arrested in some; only a few die. Diagnosis is achieved with certainty by muscle biopsy; electromyograph may help. Cases showing striking cellular infiltration in the muscle respond best to ACTH or cortisone; cases without cellular infiltrates often show no such response, in which case the condition may be caused by some metabolic or toxic disturbance.

Variations of the Motor Unit (P. Bauwens): Cases are discussed with variations of the motor unit. In some instances a neuropathic element was so scarce that it was undetected by plotting intensity-duration curves or testing for nerve conduction, but was revealed upon most searching electromyographic exploration by the presence of a few fibrillating muscle fibers. Usually some other pathologic process was present; when this primary cause was removed, the electromyographic pattern "on volition reverted to an interference pattern compounded of potentials of normal amplitude and duration." The reversible character is suggestive of an endogenous toxin activity serving first as an inhibiting agent, not one causing inflammatory or degenerative processes. In cases of pure polymyositis the electromyographic tracing on volition cannot be distinguished from that of a myopathy. "In myopathies, the small potentials occur repetitively at frequencies approximating those of the normal motor units, while in myelopathies they occur in recognizable discontinuous repetitive trains at those frequencies."

Clinical and Electromyographic Aspects of Polymyositis (A. T. Richardson): In a group of 52 cases with a report of a myopathic lesion, 13 of which were referred for electromyography, in addition to these 13 cases of polymyositis, 10 of the 21 which occurred in adults proved to be polymyositis; in the 31 occurring in children, the diagnosis was established in only three. Clinical diagnosis of this disease is made if muscle wasting is accompanied by typical skin involvement (dermatomyositis), de-

squamating erythema, sclerodermatous changes, or calcinosis. In most cases electromyography is necessary in addition to clinical findings for proper diagnosis.

NERVOUS SYSTEM

Physiology of Spinal Cord, Nerve Root and Peripheral Nerve Compression, S. Gelfan and I. M. Tarlov. Amer. J. Physiol. 185: 217-29, 1956.

The pattern of modification of neural responses by compression, and the recovery pattern following decompression are quite different from patterns noted during anoxia and during recovery. This seems to indicate a difference in mechanisms by which mechanical deformation and oxygen lack block conduction. The smallest fibers in the dorsal, roots and peripheral nerves are most resistant to pressure, and the largest fibers most susceptible. Primary afferent neurons are more vulnerable than secondary ones to moderate, but suprasystolic, circumferential spinal cord pressure. The opposite effect occurs in anoxia; the secondary neurons are inactivated before the dorsal column fibers. Thus, the effects of compression on spinal cord, root or peripheral nerve are a result of mechanical deformation of these structures, not to the inevitable ischemia of the small compressed segment. The pattern of a developing compression block is unmistakably different from the pattern of an anoxic block.

Neural Therapy; With Special Reference to Certain Uses of Procaine for Therapeutic Purposes (Pt. III & IV), K. E. Kretzschmar. Med. Times 84: 635-49, 1956.

Intra-paravascular procaine injections, with use of no more than 0.5 cc. of a 2% solution is a method of choice among European practitioners in treatment of certain migraines, headaches, etc. This type of injection is also effectively used in neuralgias, angina pectoris (as an adjuvant to hyperalgetic spot injection), and in certain types of insomnia. Periarticular intradermal and sometimes deeper injections are successfully used in arthrosis deformans, polyarthritis, bursitis, etc. Also in early stages of exophthalmic goiter (0.5 cc. into each thyroid lobe). No dangerous complications have been reported from use of procaine in neural therapy. The procaine compound preferred in Germany is Impletol. Numerous theories have been offered to explain why this treatment is effective but the true reason has not been found, but because it has proved effective, its use seems justified.

NEW GROWTHS

Epidermoid Cysts of the Bony Phalanges, A. P. Kelly, Jr., and R. H. Clifford. Plastic & Reconstr. Surg. 17: 309-13, 1956.

Four cases of epidermoid cysts of the phalanx are added to the total 26 cases reported. These 4 cases occurred in patients 33 to 61 years old, who were seen in an 18-month period, which suggests that this disease is more common than generally considered. The lesion occurred in the cortex of the enlarged distal phalanx without any reaction in the surrounding bone. Correct diagnosis allows cure by excision rather than amputation of the finger as previously practiced. The cause of the lesions was uncertain; the histories suggested pathologic fracture of the infected area rather than an initiating trauma. This lesion should be considered in all cases of enlarged finger-tip.

Benign Chondroblastoma, M. G. Kunkel, D. C. Dahlin and H. H. Young. J. Bone & Jt. Surg. 38-A: 817-26, 1956.

A review of all cases of bone tumors treated at the Mayo Clinic revealed 16 examples of benign chondroblastomas, or 1 per cent of total cases of primary bone tumors. Four involved the innominate bones and 2 occurred in the scapula, the first to be reported in these areas; 7 in the

femur and 3 in the humerus. The ages ranged from 8 to 54 years, with symptoms ranging from 3 months to 16 years, the average duration being about 2 years. The exact location is determined radiologically and diagnosis is established only by biopsy, which is very important as error may lead to overtreatment, even amputation. Benign chondroblastoma is confused with benign giant-cell tumor, chondrosarcoma and osteogenic sarcoma. It is differentiated from giant-cell tumor by the presence of chondroblasts and hyaline matrix with or without focal calcification; from the two sarcomas by absence of evidence of malignancy. The most common symptom is pain for long periods, the growth being slow growing. The basic chondroblastic cell, of medium size and ovoid, with roundish or oval nucleus, is intermingled with benign multi-nucleated giant cells containing up to over 50 nuclei. Thorough removal of the tumor is necessary or there may be recurrence as in one of these cases. Radiation therapy is contraindicated because of the danger of radiation-induced malignant change.

Soft-Tissue Neoplasms Associated with Congenital Neurofibromatosis, H. R. McCarroll. J. Bone & Jt. Surg. 38-A: 717-31, 1956.

Soft-tissue neoplasms associated with congenital neurofibromatosis may occur as primary neurogenic tumors or as tumors of other soft-tissue structures, as shown in a study of 136 cases. They may occur simultaneously in both forms, but tumefaction of major nerve components can exist independently with very little involvement of adjacent soft-tissue structures. When the diffuse soft-tissue involvement is relatively isolated and limited to an area of one extremity, if a radical excision of hypertrophied subcutaneous tissue, and any peripheral nerves found involved, is done, the process may be controlled. Such a procedure is unsuccessful when the soft-tissue hypertrophy is more profuse and involves an entire extremity, including deep structures, since there may be vascular and lymphatic changes. Regional surgery may control the process for a number of years but further difficulty is generally encountered. Primary neurogenic tumors in the form of neurofibromatous nodules occurred in only 9 cases; these nodules arise from the Schwann sheath of small subcutaneous nerves; in no instance were there malignant changes. A malignant schwannoma, if incompletely removed, may recur in the same area many years later. Radical therapy should be considered in all cases of malignant schwannoma, and if the tumor recurs, amputation of the involved extremity. However, when malignant changes occur in a pre-existing neurofibroma, malignant tumors may occur rapidly in other parts of the body. Malignant tumors were found in only 3 of the patients.

The Roentgenographic Appearances of Osteoid Osteoma in Children, F. Knutsson. Acta radiol. Stockh. 45: 125-28, 1956.

Of 158 cases reported in the literature, 9 were aged 1 to 5 years and 18 aged from 6 to 12 years. The disease is most common between the ages of 11 and 25. A case is presented in a girl of 5 years who had a limp and a pain in the right hip and leg for a period of 4 months. Microscopic examination of a piece of the right femur showed a callus-like mass surrounding the entire circumference of the underlying bone. It proved to be an osteoid osteoma. The process healed spontaneously. No pain was complained of in the left leg which had a similar lesion.

ONYCHOLOGY

Diseases of the Nails, B. C. Tate. Practitioner 176: 497-501, 1956.

Diseases of the nails include congenital

abnormalities, ranging from absence of the nails (anonychia) to very thick nails, and those resulting from injuries. Agnails (hang nails) are due to trauma, and are frequent among cement workers, in habitual nail biters, and in non-manual workers. They often are portals to infection. Injury to the matrix disturbs the growth of the nail and may be permanent. Local infections of the nails include paronychia, an acute infection of the nail fold, chronic paronychia caused by monilia, ringworm of the nail caused by trichophyton or by epidermophyton, and syphilitic chancre. Eczema of the fingers causing nail deformity and psoriasis with small pits scattered over the nail, are often confused with ringworm. Numerous toxic, nutritional and other dystrophies affect the nails. Beau's lines, which are transverse furrows caused by temporary arrest of growth of normal nail cells may follow infection. Barrel or scroll nails are thickened and have curled-in sides. Koilonychia (spoon nails) can be a sign of microcytic anemia. Onycholysis denotes separation of the distal part of the nail bed, usually from trauma. Onychorrhexis, with longitudinal striations of the nail with a tendency to splitting occurs in a number of general disorders. Fragilitas unguium, or brittleness of the nails, with a breaking off of the end of the nail, despite general opinion, does not seem due to lessening of calcium therapy, although calcium therapy is helpful. Leuconychia, with white spots and streaks on the nails and onchogryposis come from unknown causes. Hippocratic nails are associated with chronic pulmonary and circulatory diseases; the pathology is obscure.

The Fingernails in Chronic Hypoalbuminaemia, R. C. Muehrcke. Brit. M. J. 1: 1327-28, 1956.

The observation of paired white bands in the fingernails of four hypoalbuminaemic patients is described; their presence may be useful in differentiating edematous states related to this disease from edema of cardiac origin. These bands occur only in patients with serum albumin levels below 2.2 gm. per 100 ml. The bands usually occur on the second, third and fourth fingers, and very rarely on the thumb. One patient who received 750 gm. of albumin by intravenous injections with disappearance of the bands, showed bands again when the serum albumin fell. Another patient with the same treatment maintained a serum albumin level of above 3.4 gm. per 100 level and the bands did not reappear. Permanent disappearance of bands followed in two other patients treated with cortisone and corticotrophin. The bands do not regress with vitamin therapy.

PHYSICAL MEDICINE

Osteopathic Manipulation Therapy in Geriatric Practice, R. B. Thomas. J. Amer. Osteop. Assn. 55: 539-43, 1956.

Osteopathic manipulative procedures are basic to management of the middle-aged and old patients, aiming to restore them to happy and useful citizenship. This management consists of prophylactic application of osteopathic manipulation to assist the patient to maintain a healthy body; the same techniques are applied in management of disease. The progress of the disease should be arrested with a minimum of disability, and afford the maximum amount of comfort to the patient having irreversible pathologic findings. There is no "disease of the aged," but causes and frequency of disease are different at different ages. Therefore, in addition to knowledge of the disease, it is necessary to differentiate between the aging process and the disease process as it appears in the aging organism. The management of rheumatic conditions, cardiovascular disease, gastrointestinal com-

plaints and chronic infective disease is described. Management of mechanical faults is a primary approach to the prevention, repair, or control of a disease process.

Rehabilitation—A Present-Day Concept, W. Beaumont. Brit. J. Phys. Med. 19: 104-12, 1956.

Following World War II rehabilitation of the disabled was provided: the best treatments, new jobs, pensions, and rehabilitation units were established, together with facilities for vocational training and resettlement in entirely new work. Rehabilitation later included casualties of peacetime, such as recovering from a long sickness, postoperative conditions (arthroplasty, meniscectomy, mastectomy, hysterectomy, thoracoplasty, peptic ulcer), cardiovascular conditions, arthritis, industrial disability. The rehabilitation units were of various types: industrial, hospital, nonresidential, domestic and specialized.

RHEUMATOLOGY, ARTHRITIS

Quantitation of the Activity of Rheumatoid Arthritis, I. *A. Method for Recording Its Systemic Manifestations,* J. Lansbury. Am. J. M. Sci. 231: 616-21, 1956.

Rheumatoid arthritis is more than a disease of the joints; it is a systemic disease which may involve the central nervous system, the vasculature, the connective tissue system (muscles, bones, ligaments, cartilages, tendons, tendon heaths, fascia), together with the hematologic and immunity mechanisms and even the lungs—all of which must be taken into account in evaluating the activity of the disease. Measurement of this activity is by its total inflammatory manifestations. Evaluation of joint activity—range of motion, swelling, fluid, tenderness, heat and deformity—fails to distinguish between active and extinct disease. It is valuable at the beginning and end of a course of treatment and at certain periods in between, but not continuously.

The objective systemic manifestations of rheumatoid arthritis are fever, weight loss, increased ESR, anemia, reversed A/G ratio, and C-reactive protein. None is a specific manifestation of the disease, but each is a valid indicator of activity. The quantitation of symptomatology is not measured by degree of severity, since patients differ in sensitivity; duration of the disease is an objective measurement of the symptom. Since the symptoms have a periodicity they can be quantitated by recording the number of hours during which they persist each day. Measurement of duration is evaluated as pain at rest, diurnal, vestral, nocturnal; pain on motion; morning stiffness; diurnal stiffness after rest; fatigue; salicylate consumption; weakness. These various factors are discussed, and a form suggested for recording these systemic manifestations. If all the findings are negative, there can be no systemic rheumatic activity; the symptoms will be due to residual deformities, and require orthopedic and physical therapy, not medical treatment. Therefore, evaluation of systemic manifestations of rheumatoid arthritis should be used as an adjunct to joint evaluation in forming a reliable estimate of the patient's status.

The L. E. Test in Patients Presenting the Clinical Picture of Rheumatoid Arthritis, S. W. Ross and E. K. Clardy. South. M. J. 49: 553-59, 1956.

Ninety-one patients with symptoms of rheumatoid arthritis received the L. E. cell test, either by use of an anticoagulent according to a modification of the Mathis method, or with an anticoagulant, a modification of the Zimmer-Hargraves method. Eighteen of these patients had a positive result and showed a higher incidence of

involvement of two or more systems than the control group of 20 individuals, and 53 patients with negative tests. These results indicated the reliability of reports showing that the incidence of involvement of the systems is specifically related to positive L. E. tests. However, the findings did not indicate the relationship between systemic lupus erythematosus and rheumatoid arthritis.

Haemogglutination Tests for Rheumatoid Arthritis (Editorial). Brit. M. J. 1: 1157-58, 1956.

Laboratory tests made with a modified Rose-Waaler sensitized sheep cell agglutination test gave reliable results in over 90 per cent of cases. It has been shown that in cases giving negative results there is an absence of the normal inhibiting factor in rheumatoid serum. This inhibitor is known to be part of Cohn's fraction II. Preliminary partial separation of the agglutinating from inhibiting factor is done by precipitation of the englobulin fraction at *p*H 6 by dialysis *against* a dilute phosphate buffer; the englobulin fraction is tested against sensitized sheep cells. Increased activity is shown when compared to whole serum. Even more sensitive, and most favored, is testing the englobulin factor regarding its capacity to inhibit the agglutination of sensitized sheep cells by known positive rheumatoid serum. Bernstock and associates reported disappointing results; however, they did confirm the findings that fewer false positives result with the new techniques. The new tests are laborious and small technical errors can upset the results. They may be practical only in specialized laboratories with facilities devoted to this purpose. With elimination of these adverse factors, it may be that these tests may prove to be specific for study of rheumatoid arthritis.

SURGERY

Minor Open Wounds (Editorial), C. Mathewson. Surg., Gynec. & Obst. 102: 369-71, 1956.

The potential dangers of minor wounds are too little emphasized. The seriousness of the injury is not indicated by force of the blow, size of the wound, nor by the initial extent of tissue damage. The layman does not recognize the possibility of infection in a minor open wound; he uses home remedies which allow contamination and devitalization of the tissues. The open wound must be thoroughly cleansed and protected by sterile dressings. Local use of antiseptics is condemned. Debridement of contaminated wounds should be done with care to prevent secondary cellulitis and lymphangitis. These complications frequently occur in minor wounds of the extremities which have been sutured under questionable conditions. Antibiotics should be used only as adjunct to cleansing and rest by immobilization.

Studies in Restorative Growth Processes in Mammalian Wound Healing, M. A. S. Van Den Brenk. Brit. J. Surg. 43: 525-59, 1956.

Experimental studies in growth processes in mammalian wound healing were made by use of round-table ear-chambers inserted under anesthesia into the ears of adult rabbits. Photographic records were made every second day after the seventh day (the latent period) and successive isopleths were made and measured. Growth appeared on the eighth day in a series of 80 chambers.

In the process of new capillary formation and in vascular remodelling, the endometrium acts as an independent tissue, maintaining its status and arising only from pre-existing endothelium in regenerative processes. The vascular and lymphatic endothelium also remain independent in

regeneration. Scarcely any mitoses appear in the endothelium, which seems to indicate that either mitoses seldom occur in the rapidly growing regenerate, or that mitoses are so rapid that they are not usually identified. Mitoses were not seen either in the buds, or the vascular endothelium of the formed regenerate, nor in the regenerated lymphatic buds and capillaries.

In a wound with the surfaces sealed with a skin graft, contraction is largely inhibited. Modern surgery has generally eliminated the process of contraction by surgical apposition of wounds, and by use of protective dressings on granulating surfaces and by use of plastic procedures. Contraction is very important, however, in the healing of wounds with tissue loss, particularly in those with deep deficits. Thermal burns usually do not contract despite profuse formation of granulation tissue and epithelial regeneration. Poor cosmetic results from burns are due not only to thickening and scarring, but also because the deficit is not reduced in size by contraction. The edema following thermal burns may increase fibroplasia to such an extent that contraction is prevented. Contraction does not occur in an infected wound with congested margins until the infection subsides. The following observations are reported:

Contraction takes place early in the healing of wounds with tissue loss, if not prevented by mechanical rigidity in the tissues. Cicatrization occurs generally after the wound closes despite the rigidity and sometimes gives rise to serious scars and deformity. That contraction rate varies considerably in tissues, because of different mobilities, is important in surgical practice and in adoption of marsupialization and related techniques in wound management. The onset and rate of contraction and the rate of growth of granulation tissue and epithelium are reduced by irradiation doses, due to the additional destruction of the more radio-sensitive elements in the tissues. Covering a wound with cellophane, perspex, or autogenous grafts inhibits contraction while it permits epimorphic regeneration. Moderate doses of cortisone decrease the contraction rate and prolong the latent period.

This study showed growth curves were established for three identifiable regenerative processes in wound healing—growth of the repair blastema, contraction, and the epimorphic regeneration of epithelium. It was concluded that "contraction is essentially a process of morphyllaxis involving cellular migration and remodelling of tissues, and involves both epitheliocyte and mechanocyte tissues, similar to morphyllactic phenomena which take place following injury in other tissues and organisms."

X-RAY

Masking Technic for Photographic Reproduction of Roentgenograms, T. W. Strauss and A. S. Tucker. Cleveland Clin. Quart. 23: 137-39, 1956.

An inexpensive and simple positive masking technique is described and illustrated, by which the quality of photographic reproduction of roentgenograms is improved. Roentgenograms with a great range of contrast are particularly suitable for making prints by this method. The technique is effective in making transparencies or lantern slides in which details are seen by transmitted light.

A New Identification Printer for Roentgenographic Film, O. Mattsson. Acta radiol., Stockholm, 45: 231-35, 1956.

A new identification printer is described and illustrated which utilizes the principle of the Akerlund apparatus described in 1931. All data regarding the patient appears on the films, as required in registration systems used in hospitals.

ORGANIZATION NEWS

Secretaries of local, state, regional affiliated, subsidiary and other related organizations are invited to submit copy for this column.

ILLINOIS

The Illinois Chiropody Society held its annual meeting on March 15, 1957 and elected the following officers: President, Dr. Philip R. Brachman; Vice President, Dr. Lola T. Reisgraf; Secretary, Dr. Max L. Golde; Treasurer, Dr. Albion W. Gordon; Sergeant-at-Arms, Dr. Charles B. Brooks; Committee Chairmen: Legislative, Dr. Leroy C. Numbers; Public Information, Dr. Peter N. Varzos; Health and Physical Education, Dr. Charles E. DeZanek; Proctoring, Dr. Ed Weisman; Membership, Dr. Fred Broun; Scientific, Dr. Jack Stern; Convention Director, Dr. Milo Turnbo; N.A.C. Councilman, Dr. John B. Collet; Delegates: Dr. Philip R. Brachman (3 years), Dr. Don Yost (2 years), Dr. John Collet (1 year); Alternates: Dr. Allen Cutler (1st), Dr. Milo Turnbo (2nd), Dr. John Graham (3rd).

Zone III of the Illinois Chiropody Society held its quarterly meeting on March 3, 1957, at the Jefferson Hotel, Peoria, Ill. The following officers were elected: President, Dr. Stuart Ruch; President Elect, Dr. George Geppner; Secretary-Treasurer, Dr. Tom Baldwin; Delegate, Dr. Alexander Tutor; Alternate Delegate, Dr. John Graham; Sergeant-at-Arms, Dr. Wm. Anderson; Scientific Chairman, Dr. Robert Shaw.

Dr. Marvin D. Marr of Cedar Rapids spoke to the group on the "Art of a Chiropody Practice."

"LIFE'S FOUNDATION — YOUR BABY'S FEET" is an outstanding and comprehensive booklet on the growth and care of children's feet. Written for the layman, it is concise, cleverly illustrated and will prove valuable especially to the parents of young children. Many Chiropodists have received a copy of this booklet and have ordered them in quantity. For those of you who have not ordered and for those who wish to reorder, please clip the order blank below and mail with your check for your supply.

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NEW YORK

Central Division

The Central Division of the Podiatry Society of the State of New York is sponsoring a post-graduate seminar under the direction of the University of the State of New York, College of Medicine, in Syracuse on May 19-20th.

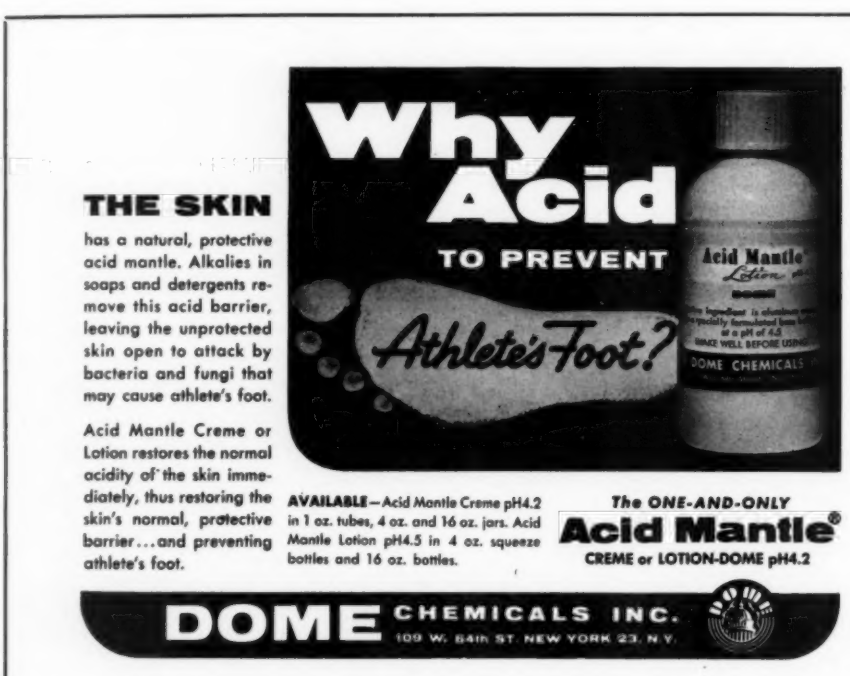
The program will consist of the following topics: Arthritis, Peripheral Vascular Disease, Neurologic Disease of the Foot and Leg, and Differential Diagnosis of Surgical Lesions of the Foot. Speakers who are on the faculty of the Medical School are: Harry A. Feldman, M.D.; Roscoe D. Severence, M.D.; Lloyd S. Rogers, M.D.; Stanly Batkin, M.D.; and Francis Caliva, M.D. Marvin Steinberg, Pod.D., will be a guest lecturer.

A dinner dance on May 19th at the Hotel Syracuse will be held in conjunction with the program. Registration fee will be $12.00. Further information may be obtained from Dr. Morris Schechter, 714 State Tower Building, Syracuse, N. Y.

Kings Division

A Podiatry Clinic has been set-up in the Jewish Hospital of Brooklyn for both in-patient and out-patient service. Since the hospital is an affiliate of the Medical School of the State University, senior medical students and student nurses will be assigned for observation and training in the podiatry section. The clinic will be under the direction of Dr. H. Weinerman with the following staff: Tuesday mornings—Drs. J. Freeman, A. Silverman, H. Sapenoff, B. Blander, and H. Marquit; Friday mornings—Drs. I. Furie, M. Zegans, M. Cupshan, I. Hanover, and B. Brody.

Dr. Samuel Brezak, Chairman of the Hospital Qualifications Committee, set the pattern for the clinic in the negotiations for its establishment.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OHIO

The Ohio College of Chiropody has appointed Thomas J. Fletcher, D.S.C., Director of the Clinics. Dr. Fletcher is a member of the N.A.C. and Fellow of the A.A.C. He is a graduate of the Illinois College of Chiropody and holds an honorary degree from the Ohio College of Chiropody.

OKLAHOMA

The Oklahoma Chiropody Association held its annual meeting at the Hotel Mayo, Tulsa, Okla., on April 6, 1957. The following officers were elected: President, Dr. Donald Landrum; President Elect, Dr. Earl Weiber; Editor of Chiropod, Dr. Donald Landrum; Vice Presidents, Dr. Charles M. Pike, Dr. O. R. Donoho; Secretary, Dr. H. R. Johnson; Treasurer, Dr. Milton Gennis; Board of Governors, Dr. Ralph Owens, Dr. Harry Bonnell, Dr. Robert James, Dr. A. Darwin Conley, Dr. Victor Cavener; State Board of Chiropody Examiners, Dr. Howard Johnson, Dr. Warren D. Long, Dr. Leonard Houx; N.A.C. Delegate, Dr. Howard Johnson; N.A.C. Alternate, Dr. Ralph Owens.

SOUTH CAROLINA

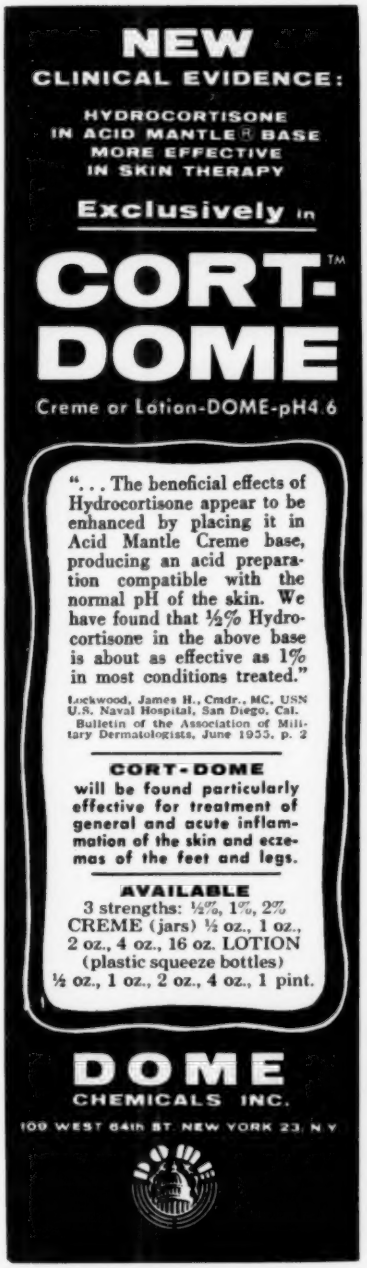
The South Carolina Chiropody Association held its quarterly meeting at Poinsett Hotel, Greenville, S. C. Dr. James Hill of Anderson lectured on neuritis and arthritis and its causes and effects on the human foot.

The first annual award of the South Carolina Chiropody Association was presented to Mr. Richard A. Lubin of Greenville for outstanding public service in South Carolina for better foot health.

ALPHA GAMMA KAPPA FRATERNITY

The National Convention of the Alpha Gamma Kappa Fraternity was held in Chicago on March 14, 1957. Delegates from three Active and three Graduate Chapters were present.

A Control Board for the administration of the Revolving A.G.K. Student Loan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Lockwood, James H., Cmdr., MC, USN U.S. Naval Hospital, San Diego, Cal. Bulletin of the Association of Military Dermatologists, June 1955, p. 2
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½ oz., 1 oz., 2 oz., 4 oz., 1 pint.
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The following officers were elected: Andrew J. Wish, D.S.C., of Cleveland, Ohio, President; William S. Burley, D.S.C., of Sarnia, Ontario, Secretary; Charles A. Roberts, D.S.C., of Sherman, Texas, Treasurer.

Social activities included a Smoker sponsored by Alpha Chapter of the Illinois College of Chiropody following the business meeting; a luncheon at the Morrison Hotel on March 16th at which Dr. Felton O. Gamble, President of N.A.C., introduced the new President, Dr. Wish; the annual "Piggy Dinner" sponsored by the Epsilon Chapter of The Chicago College of Chiropody on Saturday evening at the Sheraton Arms. Special guests at the dinner were Dr. Wish and Dr. and Mrs. Roberts.

The next National Meeting will be held in Cleveland, Ohio, sponsored by the Kappa Chapter of Ohio College of Chiropody.

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LEGAL AND LEGISLATIVE

New Mexico

Law amended making podiatry and podiatrist synonymous with chiropody and chiropodist. Grants discretionary power to the Board of Examiners to accept certification from the National Board of Chiropody Examiners. Some changes were made in the reciprocity provisions.

Another bill places Workmen's Compensation under a commission. Bill specifically includes chiropody and chiropodist.

Idaho

Entire law has been rewritten. It has been termed by some to be a model law. Some of the salient features are the complete definition of the term chiropody and the stipulation that within the scope of this act a chiropodist is a chiropodical physician and surgeon. By definition custom made shoes for therapeutic purposes can be made only by or on prescription from a licensed person in the healing arts in that state. The Board has the authority to see that the law is enforced and can revoke licenses for unethical practices. The Board may accept the written examination of a national certifying agency in lieu of their own.

Maine

The law has been amended so that chiropodists are eligible for narcotic licenses and may use internal medication in the treatment of foot conditions.

ACCREDITED CHIROPODY COLLEGES

California College of Chiropody
1770 Eddy Street
San Francisco, Calif.

Chicago College of Chiropody
1422 W. Monroe Street
Chicago, Ill.

Illinois College of Chiropody and Foot Surgery
1327 North Clark Street
Chicago, Ill.

New York College of Podiatry
53 East 124th Street
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Ohio College of Chiropody
2057 Cornell Road
Cleveland, Ohio

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1810 Spring Garden Street
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COMMUNICATION TO THE PROFESSION

Dear Editor:

Would you please publish the following in your columns:

A Research Project for the Profession

In accordance with an original paper by the writer on the "Possible Etiological Relationship Between Fungus Disease of the Human Foot and Rheumatoid Arthritis," published in the January 1956 edition of the Journal of the National Association of Chiropodists, and in an endeavor to pursue to finality this important project, I seek the collaboration of my profession. Implications as to the importance of this work are obvious.

Further observations have added both corroboration and stimulus for continued study. If the final etiologic relationship can be established, our profession would leap to the heights of recognition and scientific approbation sought by all. It may parallel the effect that the discovery of ether had on the profession of Dentistry. What is being asked can only be of benefit to both patient and practitioner.

I should like all my colleagues to collaborate on this matter and send to me their observations, all of which will be compiled and published in our National Journal.

To collaborate on this project the following is required:

1. Acquire 10 tubes of Sabouraud's maltose agar slants. (These may be purchased from your professional supply at very small cost.)
2. Select patients between ages of 25 and 45 years of age with known rheumatoid arthritis. They should have warm, painful, active involvement of one or more of the usual joints involved in rheumatoid arthritis, such as the proximal joints of fingers, metatarsal - phalangeal, knee, heel, wrist, etc., and should not have used fungicidal agents for at least a month.

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3. From the interdigital spaces of such a patient, wash with tap water, dry and collect scales with a sterile instrument and plant them upon the Sabouraud's media.
4. From the same patient, collect material from under the toenails and especially from those nails that seem to be clinically involved with fungi, and plant this material in a separate Sabouraud's culture test tube.
5. Institute meticulous antifungal care to the point of eliminating the fungal flora. Use 10-25% Ag NO_3 on nails and interdigital spaces. Prescribe a mild fungicidal agent. Advise meticulous hygienic care. Note carefully the response of the patient's joints to such care.
6. Please mail these labeled tubes to me with a brief history of the 5 cases cultured and identification will be recorded. You will receive full credit for your invaluable assistance.

Please remember that in the studies already made by myself, Dr. Harold Rubenstein, Syracuse, N. Y., Dr. Benjamin Mullens, Binghamton, N. Y., that it seems very probable that one of the most important preventive public health measures will be the prophylactic care of the human foot by the Podiatrist-Chiropodist from birth to old age. We hope to establish this definitely with your aid and thereby further dignify our profession. Research is a must for professional progress and this is a project in which we can all collaborate.

Please mail your culture tubes in suitable mailing carton to:

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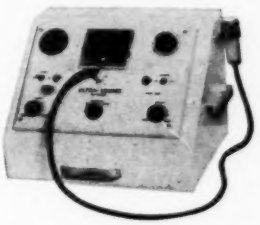

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The traction attachment gives up to 20 pounds pressure, and when applied under oscillation, treatment is positively painless.

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DEATHS REPORTED

CECILIA F. PURCELL
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Dr. Cecilia Purcell, a retired Philadelphia chiropodist, passed away on March 22. She practiced from 1910 to 1948 and was associated with the late Amanda Shoemaker.

DR. LEO SHELDON
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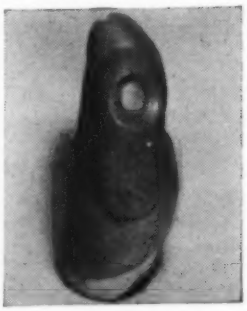

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CONVENTION DATES AND MEETING NOTICES

1957

NATIONAL ASSOCIATION OF CHIROPODISTS
Chicago, Ill.
August 14-21, 1957
Drake Hotel

THE OHIO CHIROPODISTS ASSOCIATION
Scientific Convention
Columbus, Ohio, May 24-26, 1957
Deshler-Hilton Hotel

REGION TWELVE
Western Chiropody Conference
San Francisco, Cal.
May 30-June 1, 1957
Sheraton-Palace Hotel

REGION NINE
CHIROPODY ASSOCIATION OF FLORIDA
35th Annual Convention and
Scientific Conclave
Tampa, Fla., May 30-31, June 1, 1957
Floridan Hotel

SOUTHWESTERN CHIROPODY CONGRESS
Houston, Texas
June 13-15, 1957
Shamrock-Hilton Hotel

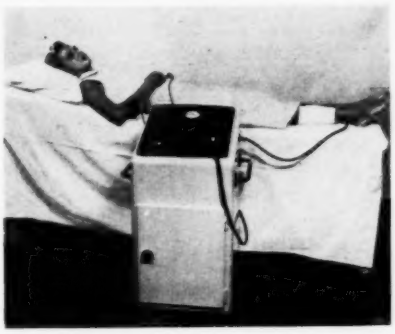
NORTH CAROLINA
CHIROPODISTS ASSOCIATION
Fayetteville, N. C., June 17-18, 1957
Prince Charles Hotel

REGION TEN
Montgomery, Ala.
Sept. 6-8, 1957
Whitley Hotel

REGION ONE
Boston, Mass.
Sept. 13-15, 1957
Sheraton Plaza Hotel

REGION EIGHT
Huntington, W. Va.
October 4-6, 1957
Pritchard Hotel

MISSOURI ASSOCIATION OF CHIROPODISTS
Kansas City, Mo., October 11-13, 1957
President Hotel



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Indicated in Treatment of:

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1. Arteriosclerosis obliterans
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3. Acute arterial obstructions
4. Raynaud's disease
5. Diabetic arteriosclerotic disease

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2. Non-inflammatory lymphedema
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1. Chronic venous insufficiency
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The treatment is followed by a remarkably prompt alleviation of pain, improvement in walking capacity, relief of intermittent claudication, and the healing of ulcers and gangrene.

* Lyons, Meadows, and Fuchs. A New Method for the treatment of Peripheral Vascular disease. Southern Medical Journal, Volume 48, Nov. 8, Aug. 1955, Pages 811-819.

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A.O.P.

A retired banker, tired of loafing, opened an auto service station. His first customer ordered 10 gallons. The banker looked him over and said, "Do you think you could get along with five?"

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Spot cash: money paid to a dry cleaner.

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"I suppose it's to be a surprise," commented the clerk.

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"Well here goes nothing!!"

Strange Patient

Miss Barbara Wheatley of Huddersfield, England, was a surprised chiropodist when a local pigeon fancier brought one of his prize birds to her for an injury to its foot. *Mirabile dictu* the bird was a good patient and is said to be doing well.

History is better at abolishing nations than nations are at abolishing war.

A taxpayer is one who doesn't have to pass a Civil Service exam to work for the government.

General Features Corp.

Eiffel Tower: The Empire State Building after taxes.

Louisville Courier-Journal

I never mind it when a woman looks poured into a dress, provided too much hasn't settled to the bottom.

Oren Arnold

One reason it's hard to get men to go to church is that they don't care what other men are wearing.

Marjorie Johnson

If a bird could tell precisely how he sings, why he sings, what he sings about, he'd never sing at all. He'd just be another professor.

Herman Betz

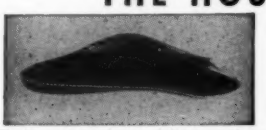
Whenever you are tempted to tell your troubles to other people, remember that half your listeners aren't interested, and the rest are glad you're finally getting what's coming to you.

Seng Fellowship

In the language of flowers, the yellow rose means friendship, the red rose means love – and the orchid usually means business.

D. O. Flynn

THE HOUSE OF COMFORT



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Their outstanding, skilled craftsmanship in the appliance of old-fashion and modern hand-made foot appliances for any kinds of deformity as well as Balance Inlays, Levy and Sansone Molds, Celastic, and arches of oak sole leather with blue tempered steel springs; also flexible type of supports of cork and rubber.

We also construct any type of stainless steel plates.

The priceless knowledge and experience which we learned and inherited from our fathers enable us to be very proud of our scores of years in orthopaedic work.

Every appliance constructed in our laboratory is hand made. We DO NOT HAVE ANY STOCK APPLIANCES OF ANY KIND.

It is our proud privilege to serve you and the profession in your every need and we look forward to hearing from you in the near future. Write for our literature.

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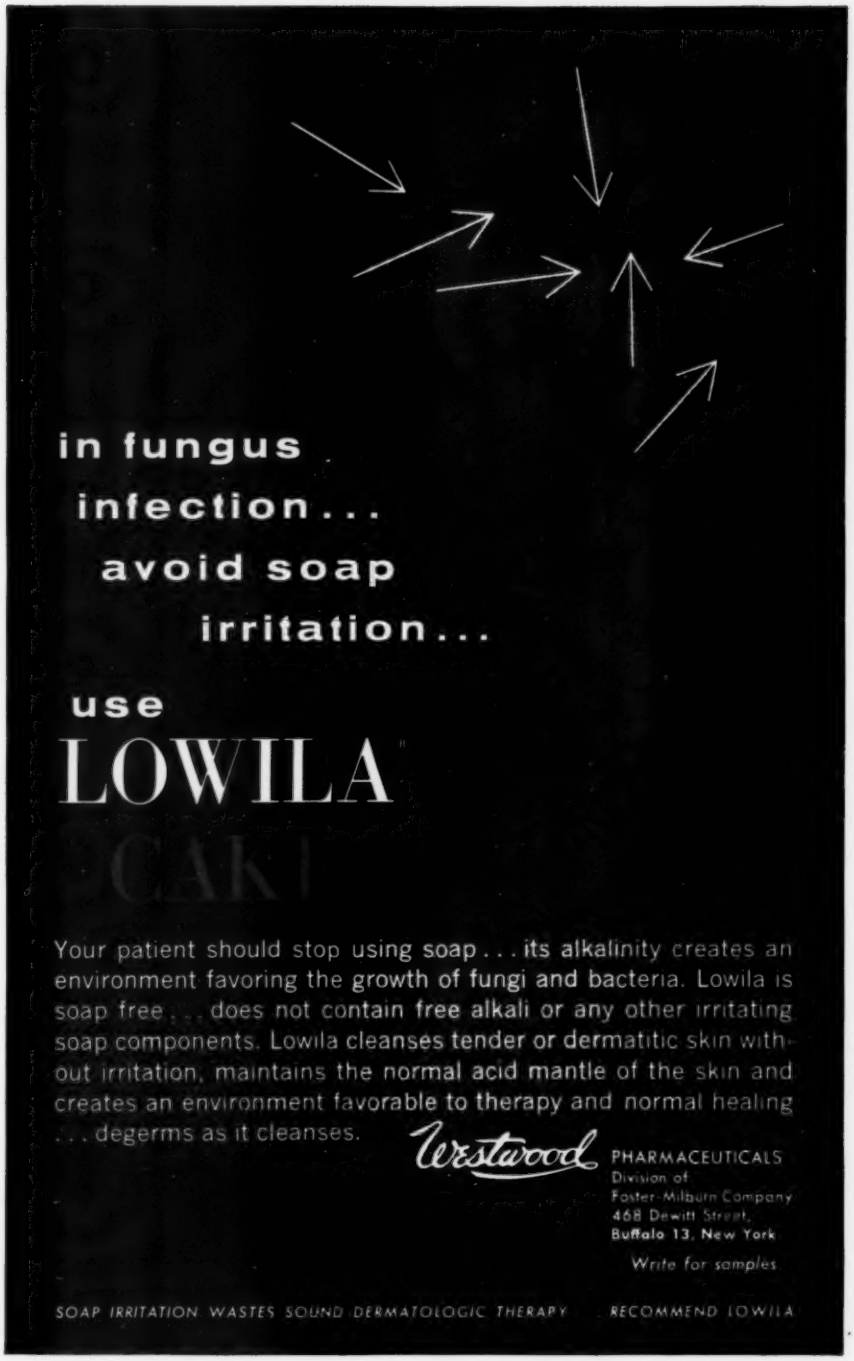

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